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Table of Contents

Editor's Comments 228

Genoese Shipowners and Their Ships in the Twelfth Century, by HILMAR C. KRUEGER 229

The Dutch East India Company as Shipowner, 1602-1796, by JAAP R. BRUIJN 240

Pat Bellinger and the May 1919 Transatlantic Flight, by PAOLO E. COLETTA 249

A Nickel a Bucket: A History of the North Carolina Shrimping Industry, by WILLIAM N. STILL, JR. 257

Book Review Article: The Second Destruction of the *Geldermalsen*, by GEORGE L. MILLER 275

Book Reviews 282

Index 286

EDITOR'S COMMENTS

THIS issue of the *Neptune* is characterized by four quite different articles as regards both time and subject matter. The first is a long and careful survey of "Genoese Shipowners and Their Ships in the Twelfth Century" written by Hilmar C. Krueger who is probably the world authority in this field. This is interesting for a number of reasons. First because we possess in Genoese notarial archives, the earliest full information available to scholars in the world about exactly how ships were built, financed, and operated by a leading maritime power. And since it was in Genoa during these years that modern Western European maritime activities took on the capitalistic characteristics they were to enjoy later on in Antwerp, Amsterdam, London, and Salem, Massachusetts, this survey is a precious one indeed.

The second article by Jaap R. Bruijn entitled, "The Dutch East India Company as Shipowner, 1602-1796," is of equal importance. In it the author surveys how the Dutch East India Company built and operated the more than fourteen hundred vessels that formed its fleet over the period of some two centuries until French Revolutionary armies ended the activities of the company in 1796 by capturing Holland. Professor Bruijn's offering contains a number of extremely interesting facts. First he notes that unlike the British East India Company the Dutch East India built all its own ships—most in the Netherlands, although a few were constructed and repaired in the East Indies themselves. Second he explains how these ships were built and what they cost over the long period of time. And third he provides us with figures on how many ships were lost during the long outward and return voyages to the East. The loss figures were remarkably low, averaging about 2 percent in all. Careful study of his article, then, and comparing it with that of Professor Krueger, reveals how maritime activities of a major power changed during the first seven hundred years of the Western European medieval and modern age of sail.

Our third offering, Paolo E. Coletta's "Pat Bellinger and the May 1919 Transatlantic Flight," tells the story of the navy's first attempt to send an airplane across the Atlantic, a project in which the British aviators Alcock and Bowen were to succeed in about the same period.

One is interested in reading this article to note that the principal problems were navigational instead of strictly technical. One also appreciates how much progress has been made in these matters during the last seven decades.

Finally we end with William N. Still, Jr.'s "A Nickel a Bucket: A History of the North Carolina Shrimping Industry." This careful account of the changes in this industry from earlier times to about 1960 explains how slowly it grew even after 1900, how it depended upon better methods of preserving the catch itself with refrigeration and freezing, and important increases in the size of ships and the intricacy of fishing nets and other equipment.

We then begin our book review section with George L. Miller's "The Second Destruction of the *Geldermalsen*" which is a companion to the Bruijn piece on the Dutch East Indies shipping. In it Miller castigates those who looted the Dutch East India Company wreck and makes clear the need we have to protect such vessels from underwater pirates in the future. And we close with more book reviews and our annual index.

ARCHIBALD R. LEWIS

Salem, Massachusetts

Genoese Shipowners and Their Ships in the Twelfth Century*

HILMAR C. KRUEGER

EVEN though scholars have written much about the commercial revolution and its connotations in the twelfth and thirteenth centuries, they have given little attention to the shipowners and their ships in the twelfth century, primarily because the data are sparse and consequently there is little about which to write. This study is an attempt, in a small and tentative way, to offer a profile of the Genoese shipowners and their ships in the middle and late twelfth century, primarily on the basis of the Genoese notarial cartularies. Genoa in that century was the busiest port in the western Mediterranean and its merchants were the most aggressive there and second only to the Venetians in the east. Fortunately many of their commercial records have survived and are presently found in the notarial cartularies located in the Archivio di Stato of Genoa. They are relatively early, very complete, and almost continuous, actually more so than similar records found elsewhere.[1]

I. THE SHIPOWNERS

But even these notarial cartularies, while replete with references to the commerce, are not always very informative about the men and women who provided the ships for that commerce. John the Scribe, the earliest Genoese notary, whose cartulary is one of the most prized possessions of the *archivio*, did not indicate the name of a single ship. And Caffaro, the equally famous Genoese annalist, after naming the first consuls of the newly formed communal government, indicated that twenty-six galleys and six sailing ships left Genoa for the Holy Land in 1099, but he did not mention their names or their owners. Such reticence was typical for the period.[2] Fortunately in the late twelfth century the references to the shipowners and their ships increased and upon them this study is primarily based.

The notarial cartularies cover the years from 1155 to 1164 and then again from 1179 to 1200. The first series was redacted by John the Scribe, the second by seven or

*The section of this study on the shipowners was given at a symposium on "The Shipowner in History" given at the XVIII International Maritime History conference, held in Greenwich, England, in September 1985. A much longer version appeared as *Navi e Proprietà Navale a Genova seconda metà del sec. XII* in *Atti della Società Ligure di Storia Patria*, n.s., XXV (1985), pp. 1-205.

1. The cartularies of the following notaries of pertinence to this study have been published: Mario Chiaudano e Mattia Moresco (ed.), *Il Cartolare di Giovanni Scriba* (2 vols., Torino, 1935); Mario Chiaudano (ed.), *Notai Liguri del sec. XII: Oberto Scriba de Mercato, 1190* (Torino, 1938); *Idem, Notai Liguri del sec. XII: Oberto Scriba de Mercato, 1186* (Torino, 1940); J. E. Eierman, H. C. Krueger, Robert L. Reynolds (ed.), *Notai del sec. XII: Bonvillano* (Genova, 1939); Margaret Hall, Hilmar C. Krueger, Robert L. Reynolds (ed.), *Notai Liguri del sec. XII: Guglielmo Cassinese, 1190-1192* (2 vols., Torino, 1938); M. W. Hall-Cole, H. C. Krueger, Robert L. Reynolds, R. G. Reinert (ed.), *Notai Liguri del sec. XII: Giovanni di Guiberto, 1200-1211* (2 vols., Genova, 1939-1940); Hilmar C. Krueger, Robert L. Reynolds (ed.), *Notai Liguri del sec. XII e XIII: Lanfranco, 1202-1226* (3 vols., 1951-1953).

In addition parts of several unpublished cartularies have been used: Cart. 2: Lanfranco et al.; Cart. 3, pt. 1, 2: Lanfranco et al.; Cart. 4: Lanfranco et al.; Cart. 5: Lanfranco et al.; Cart. 6: Guglielmo Cassinese; Cart. 56: Giovanni de Amandolesio; Ms. 102: Notariorum Diversorum; Notai Ignoti. They are listed in *Cartolari Notarili Genovesi (1-149): Inventario* in *Pubblicazioni degli Archivi di Stato*, vols. XXII, XLI (Roma, 1956, 1961).

2. There are several exceptions. Between 1087 and 1091 Count Robert I of Flanders sailed to Alexandria and then to the Holy Land in the Genoese *navis Pomella* and in 1099 Guillermus and Primus Embriacus sailed to Jaffa in their two galleys. The *Pomella* was mentioned by Caffaro in his *Liberatio Orientis* found in *Annali Genovesi di Caffaro e de' suoi Continuatori*, I (Luigi T. Belgrano, ed., in *Fonti per la Storia d'Italia*, XI [Roma, 1890], pp. 99f). The expedition of the Embriachi was described by Caffaro in the *Annali*, I, pp. 110f.

In 1126 the *navis S. Andrea* was wrecked in a storm in Genoa's harbor and in the next year the Genoese captured a Pisan galley *Alamannam* and brought it to Genoa. Ibid., pp. 23f.

Several shipowners were noted as being in litigation about the *decima maris* with the bishop (later archbishop) of Genoa in the early decades of the century. *Il Registro della Curia Arcivescovile di Genova*, ed. Luigi T. Belgrano in *Atti della Società Ligure di Storia Patria*, II, pt. 2 (1892) pp. 27f., 118, 404.

Giovanna Balbi offered an interesting study on the names of the Genoese ships in "I nomi di nave a Genova nei secoli XII e XIII" in *Miscellanea di Storia Ligure in memoria di Giorgio Falco*, XII (1966), pp. 65-86, based primarily on the printed sources. The best studies on Genoese ships in the period are Eduard Heyck, *Genua und seine Marine im Zeitalter der Kreuzzüge* (Innsbruck, 1886) and Eugene H. Byrne, *Genoese Shipping in the Twelfth and Thirteenth Centuries* (Cambridge, Mass., 1930). Heyck based his study exclusively on published official records, Byrne used primarily unpublished notarial cartularies. Robert S. Lopez has a chapter, *Le navi e la navigazione* in his *Storia delle Colonie Genovesi nel Mediterraneo* (Bologna, 1938), pp. 39-74. *Navi e naviga-*

eight different notaries.[3] In the early decade 65 shipowners, including one woman, appeared at least once in that role. Between 1165 and 1200 another 397 appeared in the cartularies and other sources; eight were women, others came from far-distant localities in Liguria and hence were not available for political office. Several were primarily pirates rather than merchants, some were operative in years not covered by the cartularies and hence their commercial interests cannot be measured, others were non-Genoese and were not at all involved in the commercial and political life of the commune. For purposes of comparison that number of shipowners should be reduced to 336. The total number of shipowners who appeared in various sources and who are considered, some only in passing, in this study is 401.

1. *As Shipowners*

In the middle of the twelfth century single owners or a single family owned 80 percent of the ships that were mentioned.[4] By the end of the century the reverse was almost true; 65 percent of the ships were owned in partnership by business associates and by family members, but increasingly small investors in a few shares also appeared. In the early decade the single owners not only traveled with their ship, but they captained it as *patronus, dominus, nauclerius*. It must be noted that many of them had been or still were occasionally pirates. In the later decades the captaincy was often divided among the owners who formed the syndicate that represented the majority-owners. But professional captains also appeared. Continuing and/or repeating ownership of significant proportions of the ship, though less than the whole, increased from 12.7 percent between 1155 and 1164 to 16 percent for 1179 to 1200; it cannot be ascertained that the ownership covered the same ship since the names of the ships appear too infrequently. Such ownership continued for several decades and in the case of the Nepitella for at least three generations. Simultaneous partial-ownership in more than a single ship remained about the same, between 5 and 6 percent of all owners.[5] The most significant change in the ownership was the amount or rate of ownership. The usual amounts ranged from one-eighth to one-fourth to one-half of the ships and to the occasional 100 percent. However, the investments in smaller amounts, in only a few shares (*loca*) increased significantly.[6] This partial ownership and the simultaneous investments in several ships offered a double opportunity for profit and at the same time offered some compensation should the investment in one of the ships fail. Ship-shares became an item for investment just like items of regular cargo.

Two simultaneous developments took place in ship ownership. An increasing number of Genoese made shipowning and shipping their primary means of livelihood; they gained their income from the carriage of cargo, of pilgrims, of crusaders, and of communal and ecclesiastical dignitaries. Secondly, an increasing number of Genoese not personally involved in commerce put some of their financial resources into the shipping business; they looked upon ship-shares as a vehicle for investment and income like any other cargo, piece of land, or place of business. Commerce, ships, shipping, and crafts related to them became almost paramount in the late twelfth century.

At the same time a new and unrelated development also took place. Partially as a result of the increasing control of Genoa over the Ligurian coast seventy shipowners came from the coastal communities in the vicinity of Genoa. In addition, thirty ships were simply identified as coming from Noli, Chiavari, Sampierdarena, Sarzana, Vintimilia, and above all from Arenzano. Seventeen shipowners came from Arenzano, which also had a shipyard. Natalis Blancus de Arenzano appeared as a shipowner in 1192, 1197, 1200, 1225, and his son of the same name appeared in 1236. Natalis as shipowner and merchant was frequently associated with his brother,

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zione a Genova nel Trecento. Il "Liber Gazarie" (Genova, 1974) by Giovanni Forcheri, even though it covers the fourteenth century, answers numerous questions on shipping in the earlier centuries for which fewer data exist. Also very informative about medieval ships and shipping are Walter Ashburner, *The Rhodian Sea-Law* (Oxford, 1909), pp. lx-ccxciii, and the numerous articles in A. Jal, *Archéologie Navale* (2 vols., Paris, 1840) and *Glossaire Nautique* (Paris, 1848). More specialized studies will be noted at the appropriate places.

3. For 1156 one contract by an unknown notary remains. For 1179 to 1200 the notaries were Obertus de Mercato, Obertus de Placentia, Guglielmo Cassinensis, Bonusvillanus, Wilielmus de Sauro, Johannes di Guiberto, and several unknown notaries. For 1176 sixteen entries of Jacobus notarius exist, but they are of no significance for this study. Archivio di Stato (hereafter ASG.), Sezione Notai, Cartella I, doc. III, nos. 1-16.

4. Some uncertainty exists because the notary's mention of single owner does not preclude the possibility of another owner, but in the majority of cases single ownership prevailed.

5. The highest number of ships owned by a single person was three. In 1160 Rubaldus Bisatia and his three *galee* went to Sicily and Byzantium, taking his brother, Enricus Guercius, a communal consul and legate, to the Byzantine court to obtain the quarter and wharves promised to the Genoese in 1155 by Emperor Manuel. Bisatia, discussed later, was a prominent political figure in Genoa and the Guerci family was a strong advocate of a pro-Byzantium foreign policy. *G. S.*, no. 666.

6. On *loca* see the last section.

Johannes, and Vasallus Blancus, a fellow resident of Arenzano. In the surviving records Natalis limited his activities to Provence and Montpellier, and very frequently was a shipper of grain. Shipowning and shipping not only invited the interests and investments of urban Genoese, but also enhanced the economic life of the nearby Ligurians. Genoa's hegemony over them proved a godsend.

2. *As Merchants*

It is not surprising that some of the shipowners were merchants; in fact, it has been stated that shipowners were foremost merchants.[7] The Genoese cartularies support a less firm position, but it must be recognized that for 1155 to 1164 the cartulary of only one (admittedly an important one) out of at least ten notaries survives. In that decade 58 percent of the shipowners (thirty-eight out of sixty-five) were connected with the overseas trade. Most of them were active in all aspects of the trade, as investors, carriers, lenders, and borrowers bound by promissory notes payable in a foreign port; three of them served only as carriers of other people's cargo. Numerous entries specifically stated that the shipowners traveled with their ships. No matter what their functions were, the majority of the shipowners were directly responsible for the safety, sales, and purchases of cargo; they were merchants.

However, the most striking feature was the low amount of the commercial investments of the sixty-five (actually thirty-eight) shipowners in the trade. They contributed only 15 percent (L. 8607) of the L. 57,381 sent overseas according to the contracts of John the Scribe and of that amount three men contributed L. 6105, i.e., 71 percent of the total amount contributed by all shipowners. Of the three men William Buronus sent off L. 3281, generally to Constantinople and the Kingdom of Jerusalem; William Ventus contributed L. 1510 for all parts of the Mediterranean.[8] Both men belonged to vice-comital families. The third man, somewhat enigmatic, was Solimanus de Salerno, who sent his cargoes (L. 1314) to all parts of the Mediterranean, but he favored Sicily, where he had connections, and countries with a Moslem legacy, especially Spain.[9] The three men ranked second, eighth, and tenth among all investors of the decade. The remaining thirty-five shipowners, in contrast, made average investments of L. 71.5 over the ten years.

Forty-two percent of the shipowners never acted as merchants according to the record of John the Scribe. While the majority of the shipowners in the early decade were involved in commerce, their investments were insignificant; only three of them were active merchants. On the basis of the single notarial cartulary one can only assert that the shipowners were primarily shipowners, skippers, and carriers, and only insignificantly commercial investors.

By the late twelfth century several changes occurred in the commercial status of the shipowners. Of the 336 shipowners, 179 were involved also as merchants, 53 percent instead of the 58 percent in the early decade. Most of them participated in all aspects of the overseas trade, in shipping, in buying and selling their own cargoes, in carrying, buying, and selling other people's merchandise, in lending money to finance the investments of their fellow-shipowners and merchants, and in borrowing money to buy their own cargo and/or pay their crews, but made payable in the port of destination. They were deeply involved in the city's overseas commerce. Moreover, their own investments amounted to 35 percent of the total overseas cargoes and cash contributions (L. 41,000-42,000 out of L. 118,000-120,000), in contrast to the 15 percent of their predecessors in mid-century. Fourteen of them invested over L. 1000 in the period. And the data are more representative than those of the earlier decade. They came from seven or eight notaries at work in the two decades.

Of the eight women who were shipowners, five were also commercial investors, though not as active as Eliadar of the earlier decade. However, the women seemed to act more independently of their husbands.[10]

7. Jacques Bernard, "Trade and Finance in the Middle Ages, 900-1500" in the *Fontana Economic History of Europe* (London, 1972), I, 316. Heyck, *Genua une seine Marine*, p. 17, asserts that the wealth and strength of the twelfth-century Genoese shipowners ensued exclusively from trade and argued that land was not the basis of their influence.

8. On William Ventus and his brother Ogerius cf. Mario Chiaudano, "Mercanti Genovesi del secolo XII" in *Studi Storici ed Economici in Memoria di Currado Barbagallo* (3 vols., Napoli, 1970), II, 142-46.

9. The origin of Solimanus de Salerno has been debated by several scholars, but the most exhaustive analysis has been made by Vsevolod Slessarev, "Die sogenannten Orientalen im mittelalterlichen Genua. Einwanderer aus Südfrankreich in der ligurischen Metropole" in *Vierteljahrschrift für Sozial- und Wirtschaftsgeschichte*, 51 (1964), 22-65. He argued for a settlement of southern French immigrants in Genoa over several centuries until the end of the thirteenth century.

10. Georges Jehel, "Le role des femmes et du milieu familial a Gênes dans les activités commercials au cours de la première moitié du XIIIe siècle" in *Revue d' Histoire Economique et Sociale*, 53 (1975), 193-215, discussed the commercial interests of Genoese women in the late twelfth century, but did not concern himself with their role as shipowners. For some unexplained reason he did not use some of the very pertinent notarial materials.

The heaviest investments (L. 5644) were made by a family partnership of the de Cruces, the most aggressive commercial organization in the late twelfth century.[11] They belonged to a noble family that had settled in Genoa in the 1170s. Antulus and Petrus de Cruce were brothers and Obertus was their nephew. Their status as shipowners was established in a small *societas* of L. 30 which Ugo de Rapallo in 1191 carried to Rome and elsewhere in a *galeotus* belonging to them and Ugo de Levanto.[12] Their earliest recorded commercial contract appeared in August 1179, in a *societas* headed for Maritima.[13] In late January 1192, one of the brothers, Antulus, died and his son, Petrus, still a minor, replaced him in the family partnership, under the tutelage of the other two. The three deemed it advisable to record their holdings in the partnership. Petrus, the uncle, had L. 940, Obertus, the early nephew, had L. 300, and Petrus, the son of Antulus, had L. 817. They agreed that Obertus should receive one-fourth of the profits and each of the other two should get one-half of the remaining three-fourths.[14] They remained a rather active trio into the thirteenth century, when the young nephew, Petrus, frequently acted independently of the other two. They favored the nearby Italian ports and Provence on routes that were safe for their exportations.

The de Cruces carried out a rather intricate commercial operation. Between January 1191 and April 1192, covered by Cassinensis, the three men entrusted their investments to twenty-eight different carriers and combined additional investments with those of twenty-eight other investors in twenty-one contracts over a fourteen-month span. Over a decade they repeatedly dealt with three or four traveling merchants in whose integrity and knowledge they trusted. They kept their investments relatively small and so reduced the risks, and they sent their associates to destinations that were safe. The de Cruces were a shrewd, but also cautious and conservative merchant family. In the fourteen months they had commercial dealings with fifty-six different merchants, and that number suggests that they must have had a private record-keeping system for their numerous transactions. Obviously they must have made other agreements before and after those months. Cassinensis may have served as their private secretary.

11. Chiaudano, "Mercanti Genovesi," pp. 132-42. He did not identify them as shipowners.

12. *G. C.*, no. 330.

13. ASG., Sez. Not., Ms 102, fol. 7v.

14. *G. C.*, no. 1549.

William Rataldus was the highest single investor in the period with L. 3165. He dispatched and/or carried his investments to all parts of the Mediterranean Sea. It was he and Fulco de Castello who invested L. 32 of their capital in one-fifth of the *cocius* headed for Syria in 1190. That was the earliest mention of a cog in the Genoese sources.[15] According to the cartulary of Cassinensis he sent out cargoes in ten of the twelve months of 1191. By September some of his carriers had returned from their spring-summer trips and he was selling some of the return cargo, African hides, to seven different buyers for a hefty L. 272-11-0.[16]

In contrast to the de Cruces, Rataldus sent very large consignments with his carriers. In January 1191, he sent L. 358 and 10 sol. to Tunis with one factor; in February he gave L. 274 and 10 sol. to a second one for carriage to Catalonia, and L. 304 and 5 sol. to a third carrier for the same place; in March his son added L. 26 and 10 den. to a *societas* for Maritima and another L. 178-6-6 to another *societas* going to Sicily; in April William and his son sent L. 125 in mixed cargo to Ceuta; in June the father dispatched L. 205-16-0 to Ceuta.[17] On the winter voyages his investments were similar: L. 163 to Constantinople; L. 244, 281, and 300 to Garbo; L. 128 to Catalonia; L. 110 to Castile. In the spring of 1192 he sent L. 185 to Ancona and Syria, and smaller sums to Sicily, Corsica, and Sardinia.[18]

Toward the end of the century the distinction between shipowner and merchant became blurred. Not only did more shipowners export and import their own merchandise, but many of them made exceptionally heavy investments in the trade. Every trip gave them two opportunities for income. And the reverse was also true; many merchants for the same reason and, more importantly, to assure themselves the necessary cargo space for their merchandise bought *loca* in several ships and thus became shipowners as well.

3. *As Investors in Noncommercial Pursuits*

While the shipowners enjoyed considerable income from their ships and related commerce, many also gained income from other pursuits, some not at all related to their main occupations. Between 1155 and

15. *O. S., 1190*, no. 663. It is doubtful that the cog was of Genoese or Mediterranean construction. It probably came from Richard I's crusading fleet and in Genoa was sold to a Genoese syndicate.

16. *G. C.*, nos. 1072, 1073, 1169, 1245.

17. Ibid., nos. 103, 218, 219, 335, 380, 432, 481, 710.

18. Ibid., nos. 1097, 1099, 1103, 1120, 1135, 1199.

1164 twenty-four of the sixty-five shipowners (36 percent) had other identifiable sources of income. Of these sources land was the most important, a logical development since many belonged to vice-comital, landowning families. William Buronus of the della Volta clan owned at least nine plots of land in and around Genoa and William Ventus, also of vice-comital lineage and associated with the della Volta, owned ten pieces of land and had partial interests in two mills; he bought such properties but seldom sold. Most of the lands of both men were farmlands, but they and others bought and sold lands in Genoa itself, near the Church of S. Syro, the cathedral of S. Lorenzo, and lands in nearby communities that soon were to become parts of the city. In addition, some held lands in fief from the archbishop. Rubaldus Bisatia, for example, held such land for twenty years, managed it, and received one-half of the entire income. Often the shipowners served as financiers, giving out loans and taking as security land and gaining income from the land until the loan was repaid. Others assumed the responsibility of collecting the *decima maris et terre* for the curia at a prepaid but nominal fee. In the lands which they held, they could and did exact portage and bridge tolls, especially from caravan dealers.

As urbanites the shipowners foresaw the possibilities in the urban growth. They bought up *apotece* and *stationes* and then rented them out; they modified dwellings for the same purpose. Many already held family stations among the fifty-two *bance* which the consuls in 1152 decreed were to remain in the hands of the owners. The Venti and their associates gained minting and banking monopolies for twenty-nine years; their and other syndicates loaned the commune money so that it could pay its creditors, often the same lenders. The shipowners whose relatives sat in the consular government had an inside track to communal business and services that rendered income. Shipowning consuls served as captains of their ships in regular communal service and in military emergencies. In the service that was beyond regular duty they and their crews were paid. Many leased the prepaid right (and responsibility) to collect the *introitum de porta et ripa*. As shipowners and merchants they were well qualified for these services, but they and members of their families enjoyed the income from the services rendered and the perquisites offered.

The former landowners who were foresighted enough to see the high profits from shipping and commerce were also smart enough to foresee the prospects in urban development and the new urban and industrial means of livelihood. It was not an accident that William Buronus and William Ventus, the two shipowners who were the foremost commercial investors, were also the foremost holders of land and real estate, and lenders to the government.

In the last decades of the twelfth century several significant changes took place according to the notarial cartularies. Only 20 percent of the shipowners had interests in land and in the numerous forms of income from it in contrast to the 35 percent in the earlier decade. As one should expect, every one of the thirty-six shipowners with vice-comital connections bought and/or sold land or held it in fief from the archbishop. Since many shipowners came from prestigious families like the Embriaci, della Volta, Guerci, de Cruce, and Venti, they by inheritance and personal investment owned numerous plots of land. Of the twelve shipowners who were the heaviest investors in the overseas trade, eleven were also owners of land, real estate, and other income-producing properties. They profited from the produce of the soil, but some also found other opportunities in the fertile valleys of the Bisagno and Pulcifere streams to the east and west of the city, from which they directed channels and aqueducts for flour-mills to produce food for the increasing population. They found dyers who needed the streams for their industry, woodworkers to produce tall candlesticks for the churches, and master-builders who needed timber of all sorts and sizes for the increasing ship-construction. Concomitantly there were fewer notices of holdings from the archiepiscopal curia in the period.

As before, the possession of land included the right to collect transit tolls. In 1182 Simon Ventus paid the marquis Malaspina and his son L. 230 for one-eighth of the castellum de Malaspina, its surrounding territory, and the right to collect the *pedagium Torrigie*, which amounted to two *denarii* for every load (*soma*) hauled along the route. In 1186 he gave the right in *pignus* for a loan of L. 62½, that indicated a very heavy use of the route between Genoa and Piacenza.[19]

The notarial records make it clear that the shipowners-merchants increased their investments in the daily economic pursuits in the city. Petrus de Cruce in his will indicated that he had rented out several houses

19. ASG., Sez. Not., Cart. 2: Lanfranco et al., 3v; *O. S. 1186*, no. 242.

in which ironworkers (*ferrarii*) had their shops.[20] Others rented out for a year or more their *stationes, apotece, botee,* and *volte*. As before, many noble families still held on to their stalls and locations in the market of Sozilia. Seemingly the shipowners of the late twelfth century favored the urban industries rather than the land, in contrast to their predecessors in the earlier decade.

Shipowners who as landowners collected the various transit taxes quickly saw the same opportunity for income from the numerous tolls in the harbor (*porte et ripe*). The consuls farmed out the right and responsibility to collect them and other dues related to the harbor and wharves to themselves, their families and business associates; the shipowners came from these groups and of course were very knowledgeable about matters connected with the sea.[21] The same development took place in regard to the *cabella salis,* through which the commune maintained its monopoly over the sale of salt in Genoa and surrounding communities. The Malloni family were managers (*procurator cabelle salis*) over several generations and other shipowners contracted to haul the salt to the city; still others were sub-procurators in the nearby cities. A similar arrangement prevailed for the *decima salis, grani, olei* which went to the archiepiscopal curia.

The data on the income from noncommercial investments, even though disparate and unbalanced, still permit several conclusions. As a source of income land was still important, but less so than in the earlier era. Investments in land beyond Genoa seemed much greater than before, possibly because land in Genoa itself was scarce and unavailable. But in the city itself the shipowners were busy buying real estate for use by small craftsmen, retailers, and sellers of consumer products. The shipowners received their customary stipends for their governmental services, but they apparently had less income from loans to the government after the 1155 restrictions on leases and loans by the consuls.

4. *In Politics and Government*

Eighteen of the 65 shipowners (28 percent) who were eligible for political office between 1155 and 1164 and 90 of the 310 (27 percent) between 1165 and 1200 were involved in the politics and government of the commune, frequently in positions of leadership and always in matters of concern to the shipowners.[22] In the early decade six were consuls (*consules pro communi, de communi, in re publica*), the highest elective office, whom Caffaro described as *de melioribus,* four were judicial consuls (*consules de placita, pro iustitia*) and several served in both capacities. The administrative consuls directed and implemented under oath the basic economic, fiscal, and diplomatic policies for the welfare of the commune, but also for the benefit of the merchants and shipowners. Four, including Rubaldus Bisatia and William Ventus, were noted as senators, i.e., members of the *consilium civitatis,* the body of elder statesmen, who were the initiating body in all matters of importance to the commune.[23]

In the later decades sixteen shipowners appeared as administrative consuls and nineteen as judicial consuls, and several shipowning families, e.g., the Guerci, Malloni, and Malocelli, had members in both positions. Many shipowners were repeaters in the consulship: Enricus de Nigro (five times), Fulco de Castello (four times), Otto de Caffaro (five times), Picamilius (four times), Raimundus de Volta (three times). In addition, several sons followed their deceased fathers in office. The judicial consuls had fewer repeaters, only seven of the nineteen; Ogerius Scotus, a judicial consul in 1194, was elected one of the four *consules maris,* a new office, in 1206. Twelve shipowners were noted as members of the *consilium civitatis* between 1165 and 1203. In twenty-nine of the thirty-five years between 1165 and 1200, at least one known shipowner held office. The presence of these men in the office reflected their personal abilities, the influence of their families, many of vice-comital descent, and the power of the shipowners in the governance of the commune.

Since these shipowners held the most influential offices in the government, they by virtue of office were members, often the leaders, of negotiating teams in foreign countries and captains of flotillas in the western waters. It must be noted that many roles demanded

20. *G. C.*, no. 1545.

21. The taxes were used to maintain the harbor and docks and on one occasion in 1139 to help pay for the construction of San Lorenzo, the cathedral church.

22. Since most shipowners in the early decade and many in the late decades traveled with their ships, these percentages are quite high.

23. The *consilium* consisted of representatives of the foremost families in the commune. Since its members were not popularly elected, their names appeared only occasionally in the official annals of the city. The names appeared in 1157, 1166, 1173, 1190, 1202, and 1203. In 1157 there were eight, in 1190 there were thirty-eight. On senator and *consilium civitatis,* cf. Th. Blumenthal, *Zur Verfassungs- und Verwaltungsgeschichte von Genua im zwölften Jahrhundert* (Galbe a. S., 1872), pp. 29-35, and Heyck, *Genua und seine Marine,* pp. 37-43.

weeks, often months of travel and absence from the city. I give three examples.

Rubaldus Bisatia, of the Guerci clan, was consul fourteen times between 1149 and 1192, starting in the very hectic years, politically and fiscally, following the Almeria-Tortosa wars in Spain.[24] In that capacity he in 1167 led four galleys which the commune had ordered into Provençal waters to protect a squadron threatened and outnumbered by Pisan galleys and in 1172 he commanded a squadron of six galleys in battle against Pisan ships, captured three of them and brought them and a Genoese ship previously captured by the Pisans to Genoa *cum magna leticia,* according to the somewhat biased account of Caffaro. But it was on the diplomatic level that Bisatia seems to have been a tall figure in all negotiations of deep concern to the commune. He in 1162 guided his fellow-consuls in the tricky negotiations with Emperor Frederick Barbarossa, negotiations that maintained Genoa's independence from Frederick's authority in spite of his threats to besiege the city. In 1164 Bisatia similarly supported and helped to maintain Baresone's control in Sardinia and thereby also to establish the favorable position of the Genoese on the island vis-a-vis the Pisans. He was an avid expansionist of Genoa's political authority and military dominance over the feudal families in Liguria, like the Malaspina and Montferrati, and a strong advocate of friendly relations with the comital families of Narbonne, Toulouse, and S. Gilles. In 1160 he and three of his galleys went first to Sicily and then to Byzantium, taking along his brother, Enricus Guercius, consul for the year and a communal legate to obtain from Emperor Manuel the quarter and wharves that he had promised to the Genoese in 1155.[25] Bisatia was a constant promoter of a pro-Byzantine policy that was necessary to obtain the residential and commercial quarters in Constantinople. Both Rubaldus Bisatia and Enricus Guertius in 1157 did not swear to abide by the consular treaty with King William I of Sicily not to assist the Byzantine emperor in any assault upon Sicily.[26] In 1170 he and several other consuls arranged to meet the Byzantine embassy at Terracina after its conference with Pope Alexander III and to invite it to Genoa and to provide the necessary portage. In 1192 Bisatia signed the treaty in which Emperor Isaac Angelos reconfirmed the privileges that the Genoese had enjoyed in the empire since 1170. In 1173 he was described as a senator, a member of the *consilium civitatis.* In Bisatia the shipowners had one of the most powerful figures in the government promoting their interests.

William Ventus, another shipowner, was a man of similar stature. Between 1144 and 1189 he was in the consulate for seven terms during which he gave strong support to the administration and simultaneously served his family's shipowning interests as well. He and his brother Ogerius contributed L. 100 to a loan of L. 400, and L. 300 to another of L. 1200, which a syndicate gave to the commune to enable it to pay off its creditors for earlier loans, which probably included the Venti.[27] The same syndicate also obtained a twenty-nine-year monopoly over the minting and banking rights in the city, which gave it a considerable and steady income. It was pretty much a hand-in-glove operation. In foreign affairs and diplomacy William Ventus, like Rubaldus Bisatia, was a directing force. In 1157 he and Ansaldus Aurie, both *nobiles et honorati legati Janue,* negotiated a treaty with King William I of Sicily that was of exceptional advantage to the Genoese merchants and shipowners and a strong deterrent to Provençal merchants who did business in Sicily. In 1165 he supported a treaty of friendship between Genoa and Count Raymond Berengar II of Provence and Melgueil. Ventus was involved in the negotiations with Frederick Barbarossa in 1162 and 1177, and with Venice in 1177. The Venti were part of the urban patriciate that had a deepening and growing interest in the commercial affairs of the city.

The last example, this one from the later decades, is Balduinus Guertius, brother of Enricus Guertius and Rubaldus Bisatia. Balduinus served as consul only once, in 1188, and in that capacity signed a treaty of peace with Pisa, at the urging of Pope Clement III, a pact supported by many other shipowners who had suffered from the interminable piracies carried out by both sides. Though not in office in the 1170s Balduinus Guertius was instrumental in persuading the counts of Lavagna (1170) and the Malaspina (1174) to accept the Genoese hegemony;[28] in 1171 he and several consuls traveled to Lucca to help the Lucchesi in the reconstruction of their city and its economy after the disas-

24. Immediately succeeding terms of office were not allowed, except in very unusual circumstances.

25. *G. S.*, nos. 398, 615, 666, 673, 674, 1181.

26. *Cod. Dipl.*, I, 344-49.

27. Ibid., 255-57.

28. *Ann. Gen.*, I, 229-33; *Cod. Dipl.*, II, 184-91.

trous war against the Pisans.[29] In the family tradition Balduinus gave much time, money, and abilities to promote close diplomatic and commercial relations with Byzantium. He had heavy investments in the Byzantine trade, owned properties in the Genoese quarters in Constantinople, probably served in the Byzantine naval forces, and must have been the purveyor of much political wisdom, especially in regard to the west, to earn the *prudentissimus* from Emperor Isaac II Angelos. In 1179 he had the responsibility of convoying Agnes, daughter of King Louis VII of France, to Constantinople, where she in the next year married the future Emperor Alexius III.[30] Balduinus supported and witnessed the treaty of friendship in which Genoa promised aid in the defense of the empire, especially against the Normans of Sicily, and in 1193 he and Guido Spinula maintained the friendly relationship in spite of the assaults of the Genoese pirate Guilielmus Grassus in the Aegean waters.[31] Balduinus was also among the Genoese leaders mentioned as going on the Third Crusade.

II. Their Ships[32]

1. *Types of Ships*

The list of ship-terms indicates that four of the ships (*navis, galea, bucius, galeotus*) generally were used in the overseas trade in the twelfth century and that many others were supportive vessels or ships appropriate only for cabotage. For the four types the data are minimal, except possibly for value, and never all-inclusive, and therefore many statements must be accepted as tentative. Many estimates are based on thirteenth-century statements.

The Genoese *navis,* the round ship, was the most popular cargo ship in the twelfth century, though somewhat

Table 1: Number of Listings

	1155-1164	*1179-1200*
navis	50	160
galea, calea	6 or 7	42
bucius, buca, bucia	4	40
galeotus	3	28
lignum[33]	2	5
sagittea		5
barca	1	
caravellum[34]	1	1
cazavellum		2
navigium		2
cazanellum		2
ascerius		2
golabus		1
cocius		1

less so in the later decades than earlier. It was a sailing vessel equipped with a main forward mast (*arbor de proda*) and a smaller after-mast (*arbor de medio*), with lateen sails (*artimon*). It had two lateral rudders (*timones*). Generally it had two decks. The top deck was protected by a heavy wooden barricade (*orlum*) about four feet high and extending from bow to stern. Already in the twelfth century it had a forecastle and a higher stern castle (*castellum, supra castellum*) with cabins, one above the other, for the main officers, the owner, and distinguished personages. It sailed everywhere in the Mediterranean and occasionally into the Atlantic. Its construction favored the loading of bulk cargo and actually demanded heavy cargo for ballast, but it took on other cargo as well. Because of its slowness and lack of maneuverability it was not used in warfare and piracy, though it was used to transport weapons, soldiers, and horses, besides pilgrims. The *galea* and its smaller version, the *galeotus,* were driven primarily by oars, but they also had auxiliary sails. They were longer, narrower, and swifter than the sailing ships and were more suitable for carrying lighter and generally more valuable cargoes. Cargo space in them was limited because of the

29. Genoa and Lucca on numerous occasions cooperated militarily against Pisa, a common foe. *Ann. Gen.*, I, 241.

30. *Ann. Gen.*, II, 13f.

31. Actually the treaty renewed the early treaty of 1170, made by Amicus de Murta. *Cod. Dipl.*, III, 77, 101-7.

32. To the studies previously mentioned must be added the very informative but also very challenging studies of John H. Pryor, "The Naval Architecture of Crusader Transport Ships: A Reconstruction of some Archetypes for Round-hulled Sailing Ships" in *The Mariners' Mirror,* 70 (1984), 171-219, 275-92, 363-86. Also his "Transportation of Horses by Sea during the Era of the Crusades, Eighth Century to 1285" in *The Mariners' Mirror,* 68 (1982), 9-27, 103-25. Of similar importance are John Dotson, "Jal's Nef X and Genoese Naval Architecture in the Thirteenth Century" in *The Mariners' Mirror,* 59 (1973), 161-70 and "A Problem of Cotton and Lead in Medieval Italian Shipping" in *Speculum,* 57 (1982), 52-62. All cover the thirteenth century.

33. *Lignum* in this period apparently was a general term used in connection with several other ship-terms. I have found *lignum galeotus, lignum buzum, lignum sagittea. Navigium,* found in a nonnotarial source, had a similar usage.

34. The *barca, caravellum coopertum* and *gabias eius* appeared in the same contract setting down the employment of three calkers to calk a *navis* and the two auxiliary boats and then to travel with the ship to Alexandria. *G. S.*, no. 578. It is possible that *cazavellum* and *cazanellum* were notarial variants of *caravellum.* In 1190 a *caravellum* was valued at L. 22. The *gabias eius* referred to the baskets used to load, unload, and carry cargo. *Gabia* certainly was not a ship as I had previously thought.

space needed for the oarsmen. They were preferred for travel by dignitaries, official delegates, and ecclesiastics, and were used for military purposes and piracy. The one significant change in the century was their greater use on the trips in the western Mediterranean and especially to the far-distant Levant. Their swiftness, the possibility of quicker turn-overs increased the number of annual trips in the western Mediterranean, combined with the growing Genoese influence, made the galleys a highly profitable investment in the late twelfth century. The galleys also were the convoy escorts. The *bucius* was a small version of the *navis* in Genoese terminology. It, the *galeotus,* and the other smaller ships limited their trips to Sicily, Sardinia, Corsica, the coastal cities between Naples and Montpellier, and to North Africa. The *cocius* that traveled to Syria in 1190 very likely was part of King Richard's crusading fleet and was sold to a syndicate of Genoese merchants and shipowners before its eastward trip. The *ascerius* apparently was a *navis* modified somewhat to transport horses.

Thirty-five of the 290 ships were specifically named in contrast to only one, the *Pomella,* in the earlier period. Most of the names were feminine (e.g., *Gloria, Diana, Rosella*), others masculine and more threatening (*Falconus, Leonus, Griffus*), still others more promising (*Benvenuta, Meliorata*).

2. *Their Values*

Many years ago Byrne indicated that he could not establish a safe estimate of the value of the Genoese ships in the twelfth and thirteenth centuries.[35] Reasons for his reluctance were several. The cost of the ships at the time of construction was not always accurate because the prospective owners often supplied some of the materials such as masts and rudders. The sale price of any ship at any time was related to its age, condition, and size. Similarly the value of a *locum* (share) in a ship varied in relation to the same circumstances and in a specific sale or lease to the destination and cargo of a ship, the risks of the trip, and the prospective *naulum,* the freight-income, from the voyage. In the late twelfth century the values of the *loca* ranged from L. 5.9 to L. 31 and averaged L. 12.5. In addition, the data on the cost and values of ships are very scarce.

Ten references to the value of the *navis* appeared in the notarial contracts of the late twelfth century. The lowest values were L. 90, 100, 103, 130; the highest were L. 1920 and 2480; and the remainder were L. 200 (twice), 288, and 360.[36] The ship valued at L. 2480 in 1192 and having 80 *loca* must have been the largest cargo-ship afloat during the decades. That very high figure and the L. 1920 in 1190 may have been related to the naval needs of the Third Crusade. Nevertheless, the 80 *loca* certainly indicate a very large ship. The sale-contracts were not very explicit about the equipment on the ships, but it must be assumed that they were fully equipped. The sales were for three-fourths, one-half, one-fourth, one-sixth, one-eighth, and one-twenty-fourth of the ships, exemplifying the partial ownership of the ships. Only two sales were for the entire ships, valued at L. 100 and L. 130.

For the *galea* only five statements on value exist, L. 126, 150, 200, 224, and 264, showing a greater consistency than for the *navis*. The sales involved one-third, one-fourth (twice), one-eighth, and one-twenty-fourth of the ships. In only one instance was the value of a *locum* given, L. 11. The *galeotus,* supposed to have been smaller than the *galea,* had values of L. 150, 200+, 240, 245, and 250.

The range for the three most popular ships was:

less than L. 100	1
between L. 101 and 200	11
between 201 and 300	6
between 301 and 400	1
beyond L. 1000 (L. 1920, 2480)	2

The *cocius* going to Syria in 1190 was valued at L. 160. In the same year a fully equipped *sagittea* had a value of L. 80. The limited data indicate that the value of most cargo ships traversing the Mediterranean in the late twelfth century ranged from L. 100 to L. 300.[37]

3. *Size and Capacity*

Only two figures on the size of the ships exist. In a contract for the construction of a *bucius* in February 1190, it was to be 60 feet or more (*XL godis et amplum*) in length; 9.75 feet or more in width at the floor of the hold (*in plano palmis XII et plus*) and 13.8 feet deep in

35. Byrne, *Genoese Shipping,* p. 22.

36. A *navis* burned by the Venetians between 1170 and 1174 was evaluated between L. 462 and L. 616, depending upon the ratio between *perperi* and *libbre*. In such claims for reimbursement for suffered losses one could expect an inflated evaluation. Another claim indicated that the *navis de Syro* had been bought for 400 *perperi* (L. 100 to L. 133 1/3).

37. Byrne, *Genoese Shipping,* pp. 22-24, gave values of L. 400 to L. 2500 for the thirteenth century.

the hold itself (*in buca*).[38] In a contract of 1192 a supplier promised to deliver several pieces of equipment for a *navis*, including the keel of 43.5 feet (*carenam I de godis XXVIIII*), a stern and stem post (2 *rotas*), a plank 16.5 feet in length (*tragantum de godis XI*), that was to serve as underpinning for the stern castle, and one-half of other equipment necessary for the ship and its grapnels. The keel of 43.5 feet indicated an overall length of about 53 feet for the ship.[39]

We are better informed about the amount of cargo that the ships carried. The tariff list of 1149 mentioned a *golabium* of 800 *mine* and another of 1,000 *mine*. The *mina* varied in weight, but 105 pounds have been suggested for the late twelfth century. Accordingly, the cargo load of a *golabium* could run from thirty-seven to forty-seven tons.[40] In September 1182, the four owners of a *navis* leased out their ship, manned by sixteen mariners, for a trip from Cagliari to Genoa for a fee of L. 125. The lessees promised a full cargo (*totum caricum*) of 1,500 cantars, i.e., about one hundred tons on board by mid-March, but the lease ran until 1 October.[41] In 1180 two shipowners and their associates agreed to carry a cargo of goods to Bugea at no charge (*dono*), but for the return trip to Genoa they charged the same merchants one bezant for every 2½ cantars of hides, i.e., about thirty-two tons, on which they paid a *naulum* of L. 83 to L. 110, depending upon the current rate of exchange. The lessors agreed to man their ship with sixteen mariners.[42] In 1201 a *navis* with twenty-eight mariners *sine conquis* was guaranteed a cargo of 1,000 cantars, about sixty-seven tons.[43]

In summary, the minimal tonnages of the ships were 37 (*golabium*), 47 (*golabium*), 100 (*navis* with sixteen mariners), 32 (*navis* with sixteen mariners), and 67 (*navis* with twenty-eight mariners). Byrne for the thirteenth century revealed tonnages of 225, 375, 402, and 600.

4. *Locum and naulum*

Size, capacity, *locum* and *naulum* had a close and all-important relationship.

The meaning and significance of *locus, locum* (the word appeared in both genders)[44] has been the cause of considerable controversy and some acrimony since Byrne stated his conclusions.[45] He concluded that the *loca* referred to the shares in a ship, that the number of *loca* were equal to the number of mariners needed to man the ship, and that each *locum* could be subdivided so that shares and fractional shares were available to a large segment of the citizenry.[46] They could be bought, sold, and leased, and were extensively used as security for the payment of sea loans in foreign ports.

Some of the differences in interpretation resulted from the absence of early communal regulations on the relationship between shipowners and shipbuilders, between shipowners and their crews, and between shipowners and the merchants whose merchandise the ships carried.[47] Therefore those relationships can only be defined on the basis of the notarial contracts of construction, employment, and portage. Unfortunately no single contract covered all the relationships and some aspects of the relationship were never covered.

The early notarial contracts and the later Genoese regulations, however, offer a basis for a general working

38. *O. S. 1190*, no. 112. The job was to be completed in six and a half months, in time for the fall-winter voyage, at a total cost of L. 100, exclusive of the oars. L. 30 were paid at the time of the agreement, L. 40 upon the completion of the job, and L. 30 about midway between those two payments. The penalty for noncompletion was L. 50.

39. *G. C.*, no. 1533. I have supplied the text for probable modification by those who are more knowledgeable about ship-construction than I am.

40. *Cod. Dipl.*, I, 252f. According to the tariff list of 1149 for incoming cargo-ships the *navis cooperta cum duabus coopertis* paid L. 3; the *galea*, 20 sol.; the *sagitta magna*, 20 sol.; the *galeotus*, 15 sol.; the *golabium*, of 1000 *mine*, 4 sol.; the *golabium* of 800 *mine*, 30 sol.; and the *golabium* from 1000 *mine* up to the capacity of a *navis magna*, whatever the tax-assessors decided.

41. ASG., Sez. Not., Cart. 2: Lanfranco et al., fol. 3.

42. ASG., Sez. Not., Not. Ignoti, cartella I, doc. 1, no. 10. It is not certain that the thirty-two tons were the total cargo, but it certainly was implied.

43. *G. G.*, no. 348.

44. The earliest use of *locus* in the cartularies was in October 1156, in a *notula* of an unknown notary. It was a sale of *V locos buce* for L. 11 and 17½ sol. to a buyer whose son already owned part of the ship. *G. S.*, II, Appendix II, no. 35.

45. Byrne, *Genoese Shipping*, pp. 12-21. It should be noted that Byrne was never party to the acrimony. André-E. Sayous, "Les travaux des Américains sur le commerce de Gênes aux XIIème et XIIIème siècles" in *Giornale Storico e Letterario della Liguria*, 15 (1937), 81-89, and Robert L. Reynolds, "Gli studi Americani sulla Storia Genovese," ibid., 16 (1938), 1-26. An intensive analysis of the problem has been made by Mario Chiaudano, "I *loca navis* nei documenti Genovesi dei secoli XII e XIII" in *Studi in onore di Enrico Besta* (4 vols., Milono, 1938), IV, 413-46. Chiaudano convincingly demonstrated that *loca* as shares were used in connection with land and I add one *medium locum in illis quos emi a communi Janue in cabella salis* from ASG., Cart. 18, pt. 2: Gianino de Predono, fol. 302 (1234)

46. The partition of a ship into *loca* and their sub-divisions was already noted by Ashburner, *The Rhodian Sea-Law*, pp. CXXXVff. and CLXIIIff.

47. Only fragments of the laws of the early centuries exist, and, in fact, maritime custom rather than statutes was dominant. Cf. Vita Vitale, *Le Fonti del Diritto Marittimo Ligure* (Genova, 1951), pp. 11-13.

hypothesis. It seems reasonable to assume that an owner or a syndicate of the major owners had an idea about the size and capacity of the ship to be constructed. The eventual size and capacity and hence the number of *loca* were established by the master builder (*magister axie*), the owner or the representative of the major owners, a communal official (in 1206 the *consules maris* were introduced), and a representative of the merchants (the medieval Chamber of Commerce) if not otherwise represented. The number of *loca* was based first of all on the cost of the ship and the cost was based on the ship's size and maximum freight tonnage. In the fourteenth century the waterline indicating the maximum tonnage was noted on a metal plaque at the prow, stern, and midway between the two.[48] I have found ships with 40, 42, and 80 *loca* in the twelfth century and Byrne indicated 16 to 70 for the thirteenth.

The original freight tonnage of the ship was subject to diminution with its increasing age and so was the allocated tonnage *per locum*. The original number of mariners could be increased, generally by armed mariners, if the ship entered more dangerous waters. A *galea* going from Genoa to Marseilles and Montpellier was to have on board *C marinarios et quatuor naute et quatuor supersalientes;* going from Montpellier to Barcelona it was to be manned by *C viginti quatuor marinarios* including four *nauclerii* and *quatuor supersalientes* and sixteen of the *marinarii* were to row if needed.[49] Such changes en route were decided by the merchants on board, not by the shipowners. Many contracts between shipowners and merchants included contingency provisions, suggesting that flexibility was accepted. Shipping, being what it was, demanded flexibility.

Once the ship was launched and in use, each *locum* was accountable for a specific percentage of the cost of operation, wages, maintenance, and repairs, but each *locum* was also assigned the same percentage of the total *naulum* (freight-charge) on the ship's entire cargo after all expenses had been paid. Generally the *naulum* was charged only on the homeward-bound cargo; *naulum* on the exported cargo was charged only when a merchant did not intend to return home on the same ship. If he did return, the *naulum* on the exported cargo was subtracted from the fee on the imported cargo. So a *locum* in a ship of 40 *loca* was accountable for one-fortieth of the expenses and was assigned one-fortieth of the profit.[50] More important for the traveling merchant was the allocation of cargo-weight, so in the example given one-fortieth of the total cargo-weight.[51] The scarcity of cargo space in the ever increasing commerce forced many merchants into buying ship-*loca*.[52] All records pertaining to the cargo and ongoing expenses were kept by the ship's scribe. A merchant who did not own the needed *loca* for his hoped-for cargo had to rely upon a merchant who carried less than his rightful quota, a share-broker, or the ship's captain and scribe for the accommodation, and he probably paid a fee for the accommodation.

48. Giovanni Forcheri, *Navi e Navigazione a Genova nel Trecento. Il 'Liber Gazarie'* (Genova, 1974), pp. 56ff. and Vitale, *Le Fonti . . .*, pp. 136ff.

49. ASG., Sez. Notai, Cart. 4: Lanfranco et al., fol. 223. Such changes can be accepted as exceptions to the basic contention of Byrne in regard to the identical numbers of the ship's *loca* and its mariners. On that issue the jury is still out.

50. ASG., Sez. Notai, Cart. 7: Pietro Ruffo, fols. 95-95v has *obligo tibi pignori totum naulum quod dicta loca habuerint de Sardinea in Ianuam;* ASG., Sez. Notai, Ms 1o2: Not. Div., fol. 95v reads *medietatem totius nauli quod de isto loco 1 1|2 lucratus fuero.*

51. John F. Dotson, "A Problem of Cotton and Lead in Medieval Italian Shipping" in *Speculum*, 57 (1982), 52-62, discussed some of the problems regarding cargo-weight. Byrne referred to the same problem but without discussion.

52. Ashburner, *The Rhodian Sea-Law*, pp. CLXIIIf. referred to the relationship between ship-shares and cargo-tonnage.

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The Dutch East India Company as Shipowner, 1602-1796

JAAP R. BRUIJN

AFTER a period starting in 1595, in which groups of merchants of different cities in the Republic sent ships separately to Asia, the *Verenigde Oost-Indische Compagnie,* or Dutch East India Company, was founded in 1602.[1] This company acquired by means of a charter from the States-General the exclusive right of trading and shipping east of the Cape of Good Hope and west of the Strait of Magellan. Under the aegis of this charter—which was always renewed on expiration—the Dutch East India Company took care of shipping between the Republic and trading posts and possessions in Asia for nearly two centuries. Between 1602 and 1794, 1,772 ships embarked on 4,789 voyages to the Cape and Asia, two-thirds of which took place in the eighteenth century.[2] The French occupation of the Republic in 1795 meant the end of shipping in this particular form.

SHIPBUILDER, SHIPOWNER AND SHIPPER ALL IN ONE

From the beginning the Dutch East India Company carried on its trading mostly with ships of its own. In those days this was not always the normal practice. Merchant shipping and shipownership were on the whole separate activities. Ownership of merchant vessels was in the hands of large or smaller groups of shareholders. Each ship formed its own group of shipowners, headed by a bookkeeper/manager or a master who was also a shareholder. Shares were split into 1/64 and even 1/128, and were transferable to third parties by inheritance or sale.[3] Whenever possible shippers avoided sending their goods in ships of which they were part-owner. In this way risks were spread. But the East India Company used none of these methods, nor in the eighteenth century did another important Dutch commercial enterprise called the *Middelburgse Commercie Compagnie.*

In 1602 a large capital sum of £6,424,588 was raised, on a long-term basis. Most of those who supplied this capital had no direct connections with the company. The activities of this new enterprise were spread over six boards, all of whom had a similar structure. These boards were situated in six cities in the provinces of Holland and Zeeland. Each board took charge of a carefully defined part of the company's activities: Amsterdam of one-half, Middelburg of a quarter, and Rotterdam, Delft, Hoorn and Enkhuizen of one-sixteenth each. Among those activities were the operation of shipyards and the building of ships for company use.

It is not known when precisely each board began to manage its own shipbuilding, and which ships were in fact owned by the East India Company during the first decades after 1602. After about 1620 probably most large East Indiamen, except for the *fluyts,* were built in company yards. The Amsterdam and Middelburg boards had their own yards from 1602 on, local authorities having made available sites for such yards. The Delft board rented an area for a yard in Delfshaven not long after 1602, which it purchased in 1671. Not much is known about the early activities of the other three boards. When later on the company's shipbuilding program was greatly increased, some of the yards proved too small. Removal and/or extension of yards then took place.[4] The Amsterdam yard in particular grew to such

1. A modern survey of the Dutch East India Company is F. S. Gaastra, *De geschiedenis van de VOC* (Haarlem, 1982).

2. J. R. Bruijn, "Schepen van de VOC en een vergelijking met de vaart op Azië door andere compagnieën," *Bijdragen en Mededelingen Geschiedenis der Nederlanden* 88 (1984), 5.

3. S. Hart, "Rederij," *Maritieme Geschiedenis der Nederlanden,* II (Bussum, 1977), 106-25.

4. J. C. Overvoorde and P. de Roo de la Faille, *De gebouwen van de Oost-Indische Compagnie en van de West-Indische Compagnie* (Utrecht, 1928), pp. 39-53, 73, 90, 95, 109, and 118; F. Wieringa (ed.), *De Verenigde Oostindische Compagnie in Amsterdam* (Amsterdam, 1982), pp. 63-66.

size and organization that it attracted foreign visitors. For a while it was the largest shipyard in the world. In 1746, for instance, no fewer than seven large East Indiamen were launched in one year. Naturally these shipyards were also used for maintenance and repair of ships. When ships returned from long voyages to the East this often resulted in considerable activity.

The Dutch East India Company therefore was not only merchant company and ruler, in the East, but a shipbuilder, shipowner, and shipper as well. It had a trading monopoly in Asia also. The shipyards' work force as well as the ships' crews and officers were selected and paid by the company and no third parties were involved. The company management which rested with the so-called Heren Zeventien, or Gentlemen Seventeen, often decided at its spring meeting on the number of ships to be built. This board based its decision on what was the wisest course to follow as regards the total size of the fleet and goods to be carried. During the following autumn new ships were then put into service. During the seventeenth and eighteenth centuries a total of nearly fifteen hundred ships was launched from the company's Dutch yards.[5]

They were not all ships of the same type. Especially in the seventeenth century there was a considerable mixture of types. This was mainly due to a policy of building many smaller ships, apart from the actual East Indiamen that were used for merchant shipping in Asia itself or at the Cape of Good Hope. After their voyage out these ships did not return to Holland. Rather they were maintained and repaired in company yards overseas, the largest of which was situated on the small island of Onrust just outside of Batavia (Jakarta). In addition the company used a number of Asiatic-type ships which were purchased or built by the company in Asian waters.

The most important category of ship used by the company from the beginning was the East Indiaman, which as indicated by its Dutch name *retourschip* was destined above all for shipping between Holland and the East. The name East Indiaman does not in fact denote a special type of ship, but only the particular use made of certain ships. Outwardly East Indiamen differed little from regular warships. They were armed with guns mounted on gun carriages, with gunports on either side of the ship. The difference between them and warships lay in the number and weight of the guns, but especially in the dimensions of the hull. They were all *spiegelschepen*, that is to say ships with square sterns with hulls ending at the back in a flat square stern called the *spiegel*. Quite unlike those ships with square sterns were the round-backed ships. These had a curved round stern. East Indiamen had a large cargo capacity, but were also very suitable for carrying passengers, because of their two or three continuous decks. The wide stern end of the ship offered ample accommodation for high officials as well as for the ship's officers. They were capable of defending themselves against attack by privateers and pirates, and in the East they constituted the company's naval force.[6]

But not only East Indiamen were used in voyages to and from the East. The East India Company also owned large round-backed ships for this purpose. The largest and most common ship in this category was the *fluyt*. This type of ship had been developed shortly before 1600 from older merchantmen, and gained a leading position in the European merchant fleet of Holland. It was eminently suited for bulk transport. In Asia, too, the *fluyt* with its rounded hull was highly valued for carrying rice, wheat, and pepper. In company shipping as well as in European trade the *fluyt* was regarded as a ship that was cheap to build and to maintain, and inexpensive to man. In many cases therefore it was more useful than the East Indiaman. *Fluyt*s in company service were stronger and more solidly built than most other vessels, the larger ones being provided with two continuous decks, and carrying some armament. They were built in many sizes, from 100 to 140 feet. During the earlier decades the company shipyards were probably not yet geared to the construction of this type of ship. The bulbous planking aft was difficult to construct and would sometimes loosen due to the heat of the sun. In the long run the company decided to build its own *fluyt*s along with square stern ship.[7]

5. More details on ships and voyages have just (1987) been published in vol. I of J. R. Bruijn, F. S. Gaastra and I. Schöffer, *Dutch-Asiatic Shipping in the 17th and 18th Centuries*. Most calculations, etc., are based on vol. II (outward-bound voyages) and vol. III (homeward-bound voyages), both published in 1979 (The Hague).

6. J. van Beylen, *Schepen van de Nederlanden van de late Middeleeuwen tot het einde van de 17e eeuw* (Amsterdam, 1970), pp. 7 and 98-101; J. E. Elias, *De vlootbouw in Nederland in de eerste helft der 17e eeuw* (Amsterdam, 1933), pp. 86, 89-90.

7. Van Beylen, *Schepen van de Nederlanden*, 101-9; P. van Dam, *Beschryvinge van de Oostindische Compagnie*, Rijks Geschiedkundige Publicatiën (R.G.P.) Grote Serie, vol. 63 (ed. F. W. Stapel, The Hague, 1927), 451, 462-63, and 469-70.

During the seventeenth century the many types of ships that were used were not produced in the six company shipyards only. They also were the result of the chartering and purchasing of ships from other sources. This was especially true during periods when the company yards' capacity was insufficient to provide the tonnage needed. Accordingly, there was little standardization of ships in use until the end of the seventeenth century.

The Company as Shipbuilder

It was not the directors of the boards but the Gentlemen Seventeen that decided on regulations governing the building of ships. The first of these was issued in 1603. These regulations were mostly concerned with the dimensions of length, width, and depth. The right proportion between these three measurements was of the utmost importance, otherwise the result would be a too narrow or a too clumsy ship. The master shipwrights and the directors of the six shipyards tended to take liberties with these dimensions. As early as 1616 for example, the board of directors ordered penalties when their directives were disobeyed, but the constant reiteration of directives leads one to suspect that they were not always strictly applied.[8]

The largest East Indiamen were divided into three classes or rates. Each rate had its own fixed measurements. In 1614 these were respectively 150 x 33 x 13 feet, 138 x 36 x 14 feet, and 130 x 26 x 12 feet. In these regulations the Amsterdam foot measure of 11 inches was retained, measuring 28.3 cm. Other boards building vessels using different foot measures were frequently reminded that they ought to regard the Amsterdam foot as their basic measure. Yet from the beginning these measurements were regularly changed. In looking back on a century of shipbuilding the company historian Pieter van Dam concluded around 1700 that "one cannot read except with the greatest astonishment of the alterations that from time to time, now this way, then that, were made or occurred; after having been understood one way this year, and another way the next . . . it being greatly to be wondered at, that in the course of 100 years it has not been possible to arrive at the proper understanding of one single rate."[9] So the dimensions of 1614, based in turn on those of 1603, were altered on numerous occasions. In 1626 a maximum length of 160 feet was agreed upon. With the exception of the years 1637-1651 this was hardly changed again. During that particular period only the Zeeland board was allowed to build ships of 170 feet in length, and later, on two further occasions, in 1660 and 1665, permission was given to build to that length again. But the dimensions of the smaller rates were changed constantly and their "proportions" adjusted. One reason for this was that constant changes in the navigational depth of estuaries and harbors made close attention to the ships' draughts imperative and all boards except that of Zeeland had constant problems with draught.[10]

Within the company there was much concern with this situation. The Batavian authorities had for years complained "about the diversity and differentiation in the rates . . . where length as well as width were much exceeded." "Those of the Indies" thought "that it would be much to the company's advantage if no more than a few rates could be devised and followed, because of the convenience and usefulness which could thus be derived and enjoyed from this fact." Eventually the Gentlemen Seventeen responded to these and other complaints in 1697. An emphatic order was issued that "only three kinds of ship would be allowed to be constructed, of 160, 140, and 130 feet, apart from some few *katschepen* (catbarks) or hookers." The master shipwrights of the six boards were brought together for extensive consultations and after "strenuous deliberations" it was decided on 4 April 1697, that in the future three rates were to be built, namely East Indiamen (pinnaces) of 160 x 40 x 17 feet, 145 x 36 feet 8¾ inches x 15 feet 7¾ inches, and 130 x 33 feet 6½ inches x 14 feet 4½ inches. A system of controls regulating the use of these measurements was also established. It was also provided however that small ships could be used in the East as well as for the possibility of the 130-foot rate to be built as *fluyt*s or *hekboot*s.[11]

The decision in 1697 to build only three rates of East Indiamen and to enforce the decision strictly, succeeded in introducing uniformity and standardization into the company's fleet. The gradual decline in intra-Asiatic shipping and the opening of direct links between Holland and places in the East other than Batavia also con-

8. Van Dam, *Beschryvinge*, R.G.P. Grote Serie, vol. 63 (1927), 461-67.

9. Id., 456 and 475-76.

10. Id., 470 and 472.

11. Id., 474-77 and 493-504.

tributed to the disappearance of smaller types of ships. Concentration on three rates of East Indiamen did not mean, however, that from then on their dimensions and proportions remained unchanged. As early as 1714 widths were increased with a view to draught and carrying capacity. As a result the majority of ships became slower and less safe.[12]

During the 1720s and 1730s the company was then hit by a series of shipping disasters and review of the seaworthiness of the East Indiamen fleet became imperative. As a result of much consultation among the Gentlemen Seventeen, Governor-General Van Imhoff, and the six master shipwrights, it was decided in 1742 that practices evolved in English shipbuilding were to be followed more closely. These had become known at the Amsterdam naval dockyard since 1727, when Englishmen were employed there. A very close correspondence between length and width or depth was crucial for a ship's efficiency in transport and sailing. These proportions had been worked out by the English somewhat differently from that of the Dutch and as a result their ships were slimmer and sharper in build and the ratio between length and width was greater. They had very little more draught because they were of much lighter construction. And one immediately obvious difference was the use of a rounded stern instead of the former square stern. The three rates now measured 150 x 41 x 19 feet, 136 (later 140) x 39 x 17 feet, and 120 x 33 x 13 feet, and this last one in fact was hardly to be built at all.[13]

The condition of the waterways into and out of Dutch harbors always gave rise to much concern. "Camels" and lighters were indispensable at arrival and departure. And around 1760 the waterways into the Delft and Rotterdam harbors became increasingly silted up. The boards in these ports then managed to get permission to reduce the draughts of their ships. This meant that the rates were continually being meddled with by the boards separately as well. The most drastic change was proposed by the Middelburg board in 1764. For some time other European East India companies had used so-called three-deckers in their service. The English East India Company was probably the first to do so in 1748 when it commissioned the *Boscawen*, though it did not afterwards completely change over to this type. The Swedish East India Company, however, actually did so in 1753.[14]

Three-deckers were not a completely new type of ship. Normally East Indiamen had two continuous decks, the orlop deck below and the gundeck above. Over the gundeck fore was the forecastle and in the aft the halfdeck. These were connected by walkways. The open space between the foremast and the mainmast was called the waist. On three-deckers another complete deck was built above the gundeck, so that the waist disappeared. These vessels were sometimes called flushdeck ships. It was claimed that the great advantage of these ships was that in heavy storms and "dreadfully high seas" they did not become filled with water amidship. Many a vessel with a waist deck on the other hand did not prove seaworthy and lost people and goods as a result. Typhoons in the Indian Ocean and the South China Sea, and near the Cape during the winter season, were much feared because of this.

From 1764 on Middelburg built a number of three-deckers, but for years the other boards refused to follow suit. Only after a long struggle in 1793 did they concede that the Zeelanders built better ships. There was however no need for an adjustment in the rates on account of this change.[15]

The company remained active as builder of its own ships up to the end of its existence. Table 1 gives a survey of its output.

The Company as Shipowner

The numbers and types of ships built by the company were geared to the use it could make of them in carrying of the cargoes which the company had to transport. Three times per year a fleet was sent from Holland to the East. Departure dates were fixed in such a way as to link up with intra-Asiatic local shipping. During the eighteenth century fixed departure dates were less adhered

12. The Hague, State Archive, VOC 221, resolution Heren XVII of 18-7-1714.

13. Ibid., VOC 47, minute res. Heren XVII of 6-3, 9-5, and 15-6-1741 and VOC 259, res. Chamber of Amsterdam of 18-12-1741; J. R. Bruijn, "Engelse scheepsbouwers op de Amsterdamse admiraliteitswerf in de achttiende eeuw: enkele aspecten," *Mededelingen Nederlandse Vereniging voor Zeegeschiedenis*, vol. 25 (1972), 18-24.

14. J. Sutton, *Lords of the East. The East India Company and Its Ships* (London, 1981), p. 52; C. Koninckx, *The first and second charters of the Swedish East India Company, 1731-1766* (Kortrijk, 1980), p. 161.

15. The Hague, State Archive, VOC 58, minute res. Heren XVII of 4-4-1764 and VOC 144, res. Heren XVII of 28-12-1793; E. Lombard and W. Udemans, *Antwoorden op de vraagen welke schepen behoorende aan de V.O.C. moeten worden gebruikt* (Middleburg, 1779).

Table 1
NUMBER OF SHIPS BUILT IN COMPANY SHIPYARDS[16]

	I	*II*	*III*	*IV*	*tot.*		*I*	*II*	*III*	*IV*	*tot.*
c. 1600-09		2	11	18	31	1700-09	6	22	40	23	91
1610-19		5	16	22	43	1710-19	10	27	42	9	88
1620-29	1	3	17	58	79	1720-29	8	34	31	12	85
1630-39	2	1	12	40	55	1730-39	4	36	41	8	89
1640-49	11	3	12	44	70	1740-49	26	48	15	5	94
1650-59	5	4	11	54	74	1750-59	37	33	4	3	77
1660-69	8	7	32	60	107	1760-69	30	27		3	60
1670-79	11	4	23	37	75	1770-79	37	28	1	1	67
1680-89	7	1	32	42	82	1780-89	40	17	1	10	68
1690-99	8	12	33	37	90	1790-94	21	11		4	36
	53	42	199	412	706		219	283	175	78	755

category I: > 1.000 ton category II: 800-1.000 ton category III: 500-800 ton category IV: < 500 ton

to, since many ships were immediately redeployed on the return voyage.

In planning the deployment of their shipping capacity the Gentlemen Seventeen had at their disposal relevant information from local boards in Holland and from the Batavian authorities. The annual review of the *Navale Magt* recorded the location of the entire fleet. Table 2 gives a view of the size and distribution of this fleet. From the beginning, the company stuck to large ships with square sterns as the nucleus of its fleet which returned to Holland. But whenever necessary or desirable, it adapted its fleet to circumstance. When in 1664, for instance, war was threatening and it was considered necessary to communicate faster with the authorities in the East, some hookers were purchased, and some were also built by the company. This lasted until 1670. These hookers were especially made "for fast sailing, made very sharp." They were able to warn the richly laden returning fleets in time about possible enemy interference.[18] More than a century later, in 1788, packet boats, which were cutters, were taken into service. These small ships had to supply a fast service for dispatches and personnel transport to the East, operating within a certain timetable.[19]

Table 2
THE DUTCH EAST INDIA SHIPPING LIST:
TOTAL NUMBERS, AND NUMBER IN USE IN THE EAST[17]

	Total	*In Asia*	
1641	?	56	
1651	?	60	
1659	112	83	(unfit for return voyage: 20)
1670	?	107	(unfit for return voyage: 44)
1680	c.125	88	(unfit for return voyage: 35)
1700	150	66	
1725	161	52	
1750	135	43	
1775	118	30	
1794	108	?	

Sometimes the company adapted its fleet to specific cargoes as well. In 1714 it wanted to increase the import of sugar from Batavia and decided therefore to have special sugar-*fluyts* built; between 1714 and 1718, eight such specially adapted ships were taken into service. A change in the European sugar market, however, led to the termination of this trade in 1721.[20] Then, around 1790, it had become quite clear that the large East India-

16. See note 5.
17. Gaastra, *Geschiedenis van de VOC*, p. 107.
18. Van Dam, Beschryvinge, R.G.P. vol. 63 (1927), 472, 474, and 490; Van Beylen, *Schepen van de Nederlanden*, pp. 125 and 141-43.
19. J. de Hullu (?), "Oost-Indische paketboten in de 18e eeuw," *Jaarverslag Nederlands Postmuseum* 1966, 18-23 (reprint of 1909).
20. K. Glamann, *Dutch-Asiatic Trade 1620-1740* (The Hague 1981²), 163-64.

man was expensive in comparison with other types of ships. And so it was decided to change to a simpler type, then in vogue in European merchant shipping, the so-called three-masted pinkship.[21]

No records were kept by local boards of the separate costs to the company of each ship on delivery of such vessels into service. These costs, instead, were listed under the headings of labor costs and shipyard materials. However, newly built ships on their first voyage were assessed at a fixed amount depending on their size. On return to Holland, they were assessed again. The difference between the two amounts was listed as wear and tear ("the sailing and wastage of ships and spars"), in fact, as expenses. After repairs and maintenance, their value for the next voyage was then assessed at a new, lower amount, and the percentage for wear and tear fluctuated between 20 and 30 percent. Before her maiden voyage to China in 1728, for instance, the *Coxhoorn* (120 feet) was assessed at *f*55,888, on her return at *f*45,450; at departure on her second voyage the value was *f*48,389. The *Knappenhof* (130 feet) on her maiden voyage in 1731, was assessed at *f*83,000 and on her return from China at *f*60,196. In a 1636 estimate, a *fluyt* was assessed at *f*29,000 and wear and tear at *f*7,380.[22]

When necessary, the company, as already mentioned, bought ships from third parties. The reason might be an expected shortage of shipping or building capacity, or the special need for a ship built by others. But this was a rare occurrence. The temporary chartering of ships, however, took place more frequently. It took place on a fairly large scale during the seventeenth century and again during the Fourth Anglo-Dutch War (1780-1784), when a number of ships were chartered or purchased and sailed under the neutral Prussian flag. During this war, some company ships were also given a change of name and ships' papers, like the *Ridderkerk* and the *Blok*, which in 1783 were temporarily named *Aurich* and *Breslau*.[23] There is no evidence, however, of the chartering of ships by third parties, and only during the First and Second Anglo-Dutch Wars did ships have to be handed over for service in the warfleet.

One of a shipowner's tasks also was the manning of his ships with sufficient and competent personnel and for the company this was a continuous preoccupation. This meant providing their ships with thousands of men from the lowest to the highest ranks and this applied to chartered ships as well.[24]

The Company as Shipper

The literature is unclear about the size of the company's ships and, therefore, about the available carrying capacity. It needs to be kept in mind that the company used two systems in calculating tonnages. The measure then in use was the "last." A last was a measure that indicated volume as well as weight, namely 125 cubic feet and 2,000 kg (2 tons).

In view of the agreed ratio among the six boards on shipping and trading activities, each year the proportions in building and equipping of ships had to be adjusted (an equalization). This was based on cargo-carrying capacity, not on the number of ships. After several unsatisfactory methods, the assessment of lasts was greatly simplified in 1637. A ship's length was linked to a corresponding carrying capacity. This meant that calculation of the ship's actual size was not part of the formula. A survey of this is given in table 3. Ships acquired by purchase, like *fluyt*s, were also included in this formula; and a *fluyt* of 150 last was assessed at 100 last in the calculation. But the 1637 regulation was still not the end of it, because in 1667 the lasts were lowered proportionally and probably issued again in 1697.

As mentioned earlier, these last measurements had nothing to do with the ships' actual carrying capacity. They were used for tabulation purposes only, and how little relationship there was with the real size of ships was stated by Van Dam as follows: "It is a matter of indifference to the boards how the lasts are calculated, whether the prescribed foot of 1637 is followed, or the practice since and at present, as long as it is done in one and the same way." In 1710 it was found that ships of 160 feet, at 250 last, were calculated too heavy in the formula. They were, therefore, reduced to 200 last. Eight years later, ships of 160 feet became 180 lasts;

21. See note 33.

22. C. J. A. Jörg, *Porcelain and the Dutch China Trade* (The Hague, 1982), pp. 23-24; Glamann, *Dutch-Asiatic Trade*, pp. 42-48 and 260.

23. J. P. de Korte, *De jaarlijkse financiële verantwoording in de Verenigde Oostindische Compagnie* (Leiden, 1984), 82 and appendix, 12^{B}; Bruijn a.o., *Dutch-Asiatic Shipping* II, nos. 4407 and 4408.

24. C. R. Boxer, "The Dutch East-Indiamen; their sailors, their navigators, and life on board, 1602-1795," *Mariner's Mirror* 49 (1963), 81-104; J. R. Bruijn, "De personeelsbehoefte van de VOC overzee en aan boord bezien in Aziatisch en Nederlands perspectief," *Bijdragen en Mededelingen Geschiedenis der Nederlanden* 91 (1976), 218-48 and the article mentioned in note 2.

Table 3
LASTS MEASUREMENTS IN THE FORMULA

	1637	*c. 1667*	*c. 1697*	*1710*	*1718*
170 foot long	= 450 last				
160 foot long	= 350 last	= 250 last	= 250 last	= 200 last	= 180 last
150 foot long	= 275 last	= 140 last			
145 foot long			= 160 last	= 160 last	= 140 last
140 foot long	= 200 last	= 130 last			
130 foot long		= 100 last	= 100 last	= 100 last	= 100 last
128 foot long	= 120 last	= 90 last			

those of 150 feet, 140; while the 130-foot ships stayed at 100 lasts.[25]

But overseas in the East, the real cargoes a ship could carry were taken into account. Although an accurately calculated number of lasts was not used here either, a formula was employed which came closer to reality. Again, length was the starting point: a ship of 160 feet was assessed at 500 lasts, of 150 at 400, of 145 at 350, of 144 at 345, etc. In a memorandum written in Holland around 1735, the observation was made that for transport purposes the three rates of 160, 145, and 130 feet would contain loads of 547, 406, and 293 lasts respectively. When in the 1780s ships had to be chartered, the Gentlemen Seventeen stipulated that East Indiamen of 150 or 140 feet in length should be assessed at 450 and 400 lasts.[26]

Whether the company acted as shipper or shipowner, it did not make use of any insurance as time went on. This happened only in the earliest times of its existence. Afterwards, risks to cargoes and ships during the long voyages were borne by the company itself, and only chartered ships were insured with premiums rising steeply in the 1780s. It was those on board ship (or their sponsors) who always took out insurance on their private merchandise. Few details are known about this though the recently discovered notebook of an insurance agent shows that around 1790 a premium of 5 percent had to be paid for a voyage to Batavia, and 2½ percent for Cape of Good Hope.[27]

In any case, the percentage of accidents in shipping between Holland and the East was not high. And on relatively few occasions, ships were wrecked by storm, fog, faulty navigation, or unseaworthiness. For many years, all ships arrived safely at their destinations. For example, a total of only 105 vessels were lost due to hazards of the sea, i.e. 2 percent of all outward-bound voyages could not be completed because of mishap. During the eighteenth century, there were relatively fewer losses than in the seventeenth century. Notably small were the losses during the first twenty years of the company's existence and the period 1750-1780; as for losses due to warfare at sea, these amounted to 36 in all. Two of these ships were captured by Dunkirk privateers in 1630 and 1631, and in the course of their four wars with the Republic, the English took a few more. As for the French, their big chance came during the Nine Years' War and the War of the Spanish Succession, when they seized fifteen ships in all. And then, no ship was lost between 1712 and 1781. Finally, in 1794/95 nine ships were seized by the French and English. Nevertheless, over the whole of the company's existence, from a total of more than 4,700 outward voyages less than 3 percent (141) came to an untimely end due to accident or enemy action at sea.

25. The Hague, State Archive, VOC 101, resolution Heren XVII of 18-9 and 5-12-1637; VOC 160, id. of 11-3-1710 and VOC 116, id. of 24-9-1718; Van Dam, *Beschryvinge*, R.G.P. vol. 63 (1927), 262 and 479-80.

26. The Hague, State Archive, Collection Hudde, 20, nos. 19 and 21, no. 11; VOC 191, resolution Heren XVII of 26-11-1783 and VOC 196, id. of 13-12-1787.

27. Vlaardingen, Streekmuseum, Jan Anderson, ms. N. P. Karseboom; F. C. Spooner, *Risks at Sea. Amsterdam Insurance and Maritime Europe, 1766-1780* (Cambridge, 1983), 143-44.

It is worth noting that the percentage of ships that did not complete the return voyage was twice as high as that for the voyage out. Yet, again the number of disasters cannot be considered as very high because they totaled only 141. But in comparison with the seventeenth centutury, the hazards of the sea increased somewhat during the eighteenth century. Whereas the number of voyages doubled, now the number of accidents tripled. Though there were numerous years when the complete return fleet arrived home safely, there were certain periods when the company suffered heavy losses. This was particularly the case during the years 1722-1726, 1737-1744, and 1784-1790, when 10, 32, and 14 ships were lost. Comparatively safe periods were between 1616 and 1661 and the 1750s and 1760s. Between 1648 and 1661, for instance, not a single ship was lost. Then, through acts of war, the company lost a total of 28 ships, all but 4 to the English; this happened during the Second and Third Anglo-Dutch Wars (6), the Fourth Anglo-Dutch War (8), and finally in 1794/95 (10). The other 4 fell into Portuguese and French hands. And it is remarkable that between 1674 and 1781, with just one exception, not a single returning ship was captured by enemies. Viewed across the entire period of its existence, the company had to yield no more than 5 percent of its ships, with homebound cargoes, to either nature or warlike enemies.[28]

The Company Stays Shipowner

In general, most European East Indian companies sailed their own ships and operated their own shipyards. And the Dutch East India Company was no exception. The French Compagnie des Indes, for instance, built ships in its own shipyard at Lorient as of 1720, and in Portugal, the crown was the owner of such ships. The Belgian Compagnie van Oostende had acquired its thirteen ships by purchase between 1722 and 1727. The Danish Asiatisk Kompagnie owned a shipyard in Copenhagen as of 1732 and only very occasionally acquired ships from third parties. The Swedish Ostindiska Kompaniet, established in Gothenburg in 1731, purchased its ships from private Swedish shipyards, principally in Stockholm.[29] In fact, the English East India Company was the only large concern not to own or build its own transport vessels.

Though initially the English had begun with their own ships, built in two company-owned shipyards along the Thames River, they found that a surplus of carrying capacity—coupled with the costs of running their own ships—made the court of directors decide to charter ships in the future. And in 1639, this happened for the first time. Their two shipyards were disposed of in the following years, and the English East India Company now entered into shipping contracts with private shipowners. These were one-voyage contracts at an agreed price per ton. The owners of these ships were Thames side shipbuilders including the new owners of the company yards at Deptford and Blackwell—and the big business world of London. In this way, some of the company's directors hired their own ships! Such an overlap of interests was forbidden in 1708, but even then, there remained a small world of shipowners closely linked to the company who rented out their own ships. It was also customary for the ships to make a number of consecutive voyages, after which the shipowners and their captains had the tacit right to make another ship available. The term "hereditary bottom" was used openly.

What it boiled down to was this: the English East India Company hired cargo space in privately owned ships specially built for Asian trade, and that from a closed circle of shipowners. These owners had a monopoly enabling them to exact high rates with prices fixed in advance. To exceed the time limit cost the company extra money. This is why Chaudhuri writes as a matter of course about "the efficient utilization of ships," something much less applicable in the case of the Dutch East India Company. The shipowners also supplied the ship's captain and crew. Most of the ships were also used for four voyages, out and back.

One of the abuses of the English system was the chartering of too many ships. In 1772 the British government intervened, partly to safeguard the interest of the navy in regards to stocks of shipbuilding materials. It was

28. See note 5, chapters on "The seaway to Asia" and "The Return Voyage" in vol. I, pp. 56-92.

29. L. Denoix, "La Compagnie des Indes au XVIIIe siècle. Ses activités diverses," *Revue d'histoire économique et sociale* 34 (1956), 149-50; C. R. Boxer, *The Portuguese Seaborne Empire 1415-1825* (London, 1969), pp. 57 and 209; T. Velschow, "Voyages of the Danish Asiatic Company to India and China 1772-1792," *Scandinavian Economic History Review* 20 (1972), 148; C. Koninckx, *The Swedish East India Company*, pp. 156-57; K. Degryse, "De Maritieme organisatie van de Oostendse Chinahandel (1718-1735)," *Mededelingen Marine Academie van België* 24 (1976/1977), 19-24 and 49-55.

now forbidden to charter ships when the quantity available was not yet reduced to a certain level. And in 1796, the British East India Company was forced to charter ships from the public at large.[30] It is not known, however, whether the English system was cheaper than that of the Dutch East India Company. Glamann calculated that around 1730 the transport of one last, or two tons of tea, from China cost the Dutch East India Company *f*550, and the English East India Company *f*526.[31] Charter rates could be averaged by the shipowners over a period of four voyages, and there was no need for the system to stimulate the building of faster ships. But the contracts did stipulate close attention to the duration of voyages. The Dutch East India Company in the East also could freely dispose of its own ships, which the English East India Company could not.

The English East India Company did not employ old ships. Because most of the time its vessels made only four voyages, rarely did they last more than ten years. The Dutch East India Company, on the other hand, used its vessels for as long as they were fit to sail; six, seven, or more voyages by one ship were not exceptional. For instance, the *Meijenburg*, built in 1713 by the Zeeland board, made eleven voyages to the East before 1738, after which the ship was broken up in Batavia. It seems that this was the largest number of return trips ever made by a Dutch East India Company ship. The use of an older but regularly maintained ship could be more economical than the acquisition of a new one because on the whole, older ships remaining at sea lost little of their original speed.

There is little evidence inside the company that there was much discussion about the building and the use of company ships. In 1676, however, as a result of the Third Anglo-Dutch War (1672-1674), there was a shortage of shipping, and a few ships had to be chartered. Then, the Gentlemen Seventeen noted that the English competition had increased because they "in all things attempt economy and therefore used chartered ships, which they allow to make short voyages only."[32] But nothing further was said about this, and no decision was made to make a comparison between the cost of using one's own ships or chartering them from outsiders.

Not until the end of the eighteenth century was there a change in this policy. And then, due to the necessity of chartering or purchasing merchant vessels from private shipbuilders and owners during and after the Fourth Anglo-Dutch War, master shipwrights, shipyard commissioners, and directors found that a shortage of money made it necessary to review the costs of building and equipping their own vessels. Investigations showed that to use a three-master pinkship could mean enormous savings because the *Zeeland* shipbuilder W. Udemans showed that three pinkships could carry greater cargoes than two 150-foot East Indiamen. It seemed that building costs of a pinkship, exclusive of rigging, amounted to 95,000 guilders while those of an East Indiaman amounted to 184,000 guilders. Moreover, the pinkship could be managed by a smaller crew.[33] After this war, chartered or purchased merchantmen remained in company service but proved to be expensive.

In the end, however, the company did not diverge from its original policy. It continued to act as both shipbuilder and shipowner. As for the type of ship, a compromise was reached in 1793. In spite of the silting up of estuaries, the large vessels (now three-deckers) were retained. But to meet high building costs, as well as the problem of draught, it was decided to start building cheaper pinkships at the same time. This compromise was not put into practice for very long, however, because the French invasion of 1795 put an end to the rule of the Gentlemen Seventeen and the entire Dutch East India Company in 1796.

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30. K. N. Chaudhuri, *The English East India Company. The Study of an Early Joint-Stock Company 1600-1640* (London, 1965), pp. 95-100; J. Sutton, *Lords of the East*, pp. 17-37; K. N. Chaudhuri, *The Trading World of Asia and the English East India Company 1660-1760* (Cambridge, 1978), p. 71; E. Cotton and Ch. Fawcett, *East Indiamen. The East India Company's Maritime Service* (London, 1949), pp. 41-50.

31. Glamann, *Dutch-Asiatic Trade*, p. 47.

32. The Hague, State Archive, VOC 320, Heren XVII to Governor General and Council in Batavia 21-10-1676 (Drs. F. S. Gaastra kindly drew my attention to this episode).

33. Ibid., VOC 88, minute res. Heren XVII of 9-3-1791, VOC 93, id. of 7-6-1793 plus annexed "Consideratiën van scheepstimmermansbazen" and VOC 144, resolution Heren XVII of 2-1-1794.

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Pat Bellinger and the May 1919 Transatlantic Flight

PAOLO E. COLETTA

DURING Theodore Roosevelt's buildup of his navy to a status of "second to one," most Naval Academy graduates had their first tours in battleships. Of the class of 1907, Patrick N. L. Bellinger served as a passed midshipman in the *Vermont* and *Wisconsin* as they circumnavigated the globe between December 1907 and March 1909. He then served briefly in an experimental torpedo cruiser and as a turret officer in the battleship *South Carolina*. While in the latter, two events determined him to seek aviation duty: his being put in hack for some minor infringement of duty, and his seeing his first aircraft—a German one that flew over the great Kiel naval base while the *South Carolina* visited there in 1910 during Kaiser Wilhelm's annual Yachting Week.

To prepare himself for aviation duty, Bellinger requested submarine duty so that he could obtain experience with the gasoline motors that provided their power. He was trained by Lt. Chester W. Nimitz. When ordered to visit the first naval aviation "camp," at Greenbury Point, across the Severn River from the Naval Academy, in October 1912, he saw his second aircraft. John H. Towers, Naval Aviator No. 3, knew that Bellinger had requested aviation duty via Theodore G. "Spuds" Ellyson, Naval Aviator No. 1, and that a mixup by the detail officer in the Bureau of Navigation had postponed their issue. After Towers took Bellinger up to see if he could observe a submarine sailing under water, the orders finally arrived, on 26 November 1912, and Bellinger began his flight training under Towers's watchful eye.

Between 1912 and 1919 Bellinger qualified as a pilot, helped show the officers of the Atlantic Fleet what aircraft could do, served as a flight instructor and headed the experiment laboratory at the first naval air station, at Pensacola, set new altitude and long-distance records for seaplanes, was the second man to be catapulted in an aircraft, and commanded NAS Norfolk beginning in 1917. He also helped Towers to modify the Glenn H. Curtiss-built *America*—the first twin-engine seaplane —so that she could fly the Atlantic. The Great War intervened.[1]

When the time came for Towers, now the assistant director of Naval Aviation, to select the commanders of the planes that would try to fly the Atlantic, his first

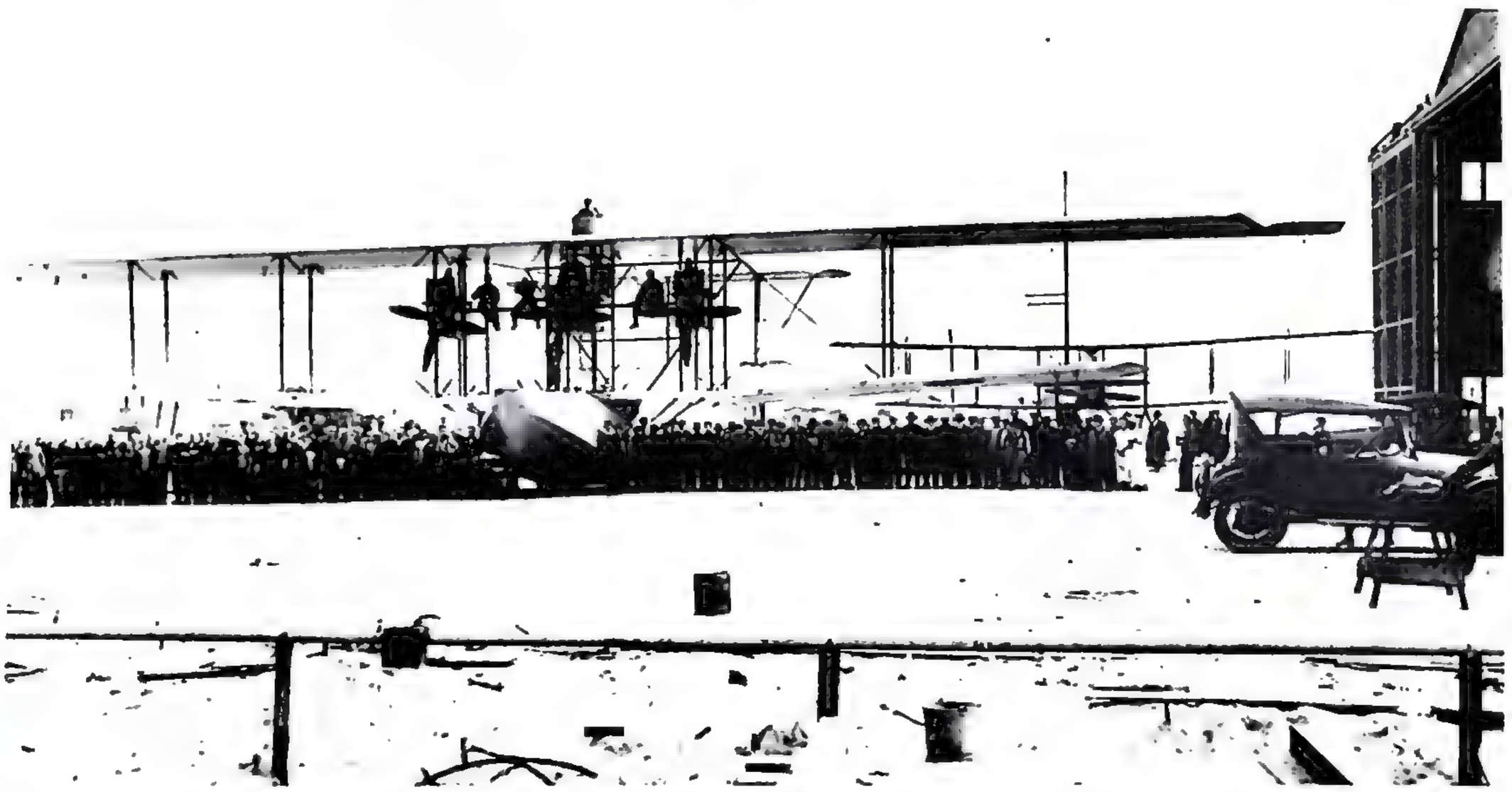
Among those who helped prepare the transatlantic flight of the NC aircraft in 1919 were, left to right: Lt. Comdr. Godfrey deChevalier, Comdr. Holden C. Richardson, Lt. (jg) Roswell E. Barratt, Lt. Comdr. Patrick N. L. Bellinger, Lt. Comdr. Richard E. Byrd, Major Bernard L. Smith, USMC, and, seated, Comdr. John H. Towers. (Courtesy U.S. Naval Historical Center.)

1. This introductory material is condensed from Vice Adm. Patrick N. L. Bellinger, USN (Ret.), "The Gooney Bird," Ms. autobiography, 1960 (Washington: Naval Historical Center, Operational Archives Branch).

choice—after himself—was Bellinger, in part because he was such a good aviator, in part because he had been denied duty overseas during the war.[2]

To avoid the great expense and time lost in crating and shipping seaplanes to Europe during the war, Rear Adm. David W. Taylor, chief of the Bureau of Construction and Repair, had asked his designers to provide planes that could be flown across. Wartime work postponed this objective, which he renewed, however, in late 1918. At the time, according to one historian, "A transatlantic flight was the most talked about and most glamorous goal of postwar aviation."[3] With his own design capability limited, Taylor turned to Curtiss for help, but the Navy would provide most of the hulls and all the motors. This was the genesis of the NCs—N for Navy, C for Curtiss. They were among the largest planes in the world, only several German Staaken and Seimens types being just a bit larger. Their wingspan from tip to tip was 126 feet, their length 68.3 feet—about the size of a modern Boeing 727 or B-707. The hull, 45 feet in length with a 10-foot beam, was divided into six watertight compartments, the uses of which are described below. Maximum speed was 85 mph, flight endurance 14.8 hours at cruising speed. On 25 November 1918 the NC-1 set a record by flying with fifty-one men aboard (the fifty-first being an enlisted man stowaway!).

Originally four planes were to be used, but damage to the NC-2 by a storm reduced the number to three. The third plane commander was Albert C. "Putty" Read.



The NC-1 is shown at Rockaway Beach. On 27 November, she established a world record by carrying fifty-one men. Notice that she had three engines while the NC-3 and NC-4 had four engines. (Courtesy U.S. Naval Institute.)

During his last few months at Norfolk, Bellinger flew F5L flying boats on day and night navigation patrols at sea and conducted radio and visual communications tests with some of the destroyers that would mark the route for the transatlantic flight. On 20 March 1919 he was detached from Norfolk and assigned to duty as one of the eight members of the transatlantic section in the office of the chief of Naval Operations, his first task being to make a survey of base facilities in Newfoundland. He set out from Boston in a destroyer on 26 March. From studying maps and charts, he had already decided upon Trepassy Bay on Newfoundland's south coast, an arm of the sea about five miles long and half a mile wide. On 16 April he reported that it would be useful only

2. Ibid., p. 155.

3. Richard K. Smith, *First Across: The U.S. Navy's Transatlantic Flight* (New York: Harper & Bros., 1961), p. 78.

under suitable wind conditions, for it ran northeastward and the wind usually came from the northwest.[4]

Bellinger knew that several British teams were in Newfoundland waiting for suitable weather to fly across. In the parlance of the day, American and British "eagles" were pitted against each other. While Bellinger sensed a spirit of rivalry, he was not competing for the fifty thousand dollars in prize money offered by department store mogul John Wannamaker, yet national honor was involved. Feeling the same way, the Navy Department looked upon the flight as a scientific expedition rather than sports contest.

The NCs were made of wood and linen held together by wires, wood screws, glue, and "dope" (the last a mixture of paraffin dissolved in gasoline that closed the weave in the fabric). For lack of better, rubber gaskets were used to make up joints. Gasoline quickly ate the rubber away and sent shreds to foul carburetors. In any event, if all went well the NCs would reach the first stop on their way, the Azores, with enough gasoline to fly an additional 240 miles.

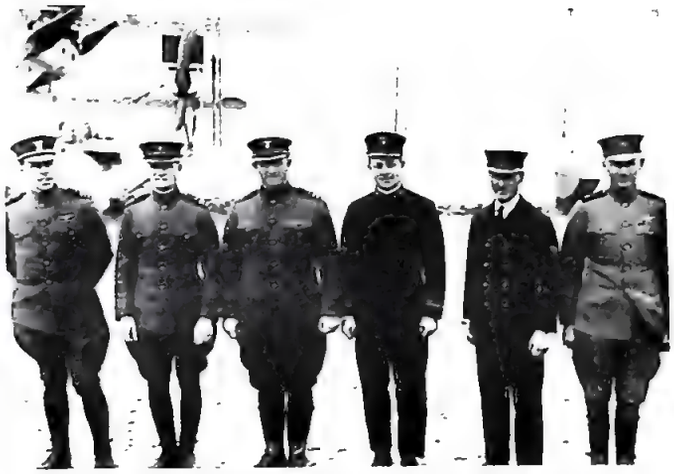
While the NC-3 and NC-4 were being completed, the NC pilots discussed how to react to every emergency they could conceive, for they had to cross one of the most malignant bodies of water in the world over polar air that clashed with the warmer air of the Gulf Stream. Ignorant of conditions of the upper air and lacking instruments that enabled them to fly blind, they planned to fly at a thousand feet. If they ran into fog and could not get below it, should they try to climb above it? If a night were black, with no horizon visible and no way to gauge the altitude of the plane—well, bad luck!

While Curtiss's men worked hard to complete the NC-3 and NC-4, prospective commanding officers and navigators took sun sights with bubble sextants developed by Richard E. Byrd which included an artificial horizon and tried to become proficient in navigation by the use of heavenly bodies. However, they would rely mostly upon dead reckoning. For that purpose they had a special instrument for getting the angle of drift over the water. At night, drift could be obtained by dropping float lights and taking bearings on them as the planes left them behind.[5]

All NC commanders were ordered to report on 23 April 1919 to Towers at NAS Rockaway, Long Island.

4. Bellinger, "Gooney Bird," pp. 156-59. The reader can choose his own pronunciation of *Trep*-asee, *Tree*-passy, Trappa-*see*, or correctly say Truh-*pass*-ee.

5. Bellinger, "Gooney Bird," pp. 161-62.



The crew of the NC-1 is shown in front of their plane at Rockaway Beach, Long Island, on 1 May 1919. From left to right: Bellinger, Lt. Comdr. Marc A. Mitscher, Lt. Louis T. Barin, Lt. (jg) Harry Sadenwater, Chief Machinist C. I. Kessler, and Machinist R. Christensen. (Courtesy U.S. Naval Historical Center.)

On 3 May the NCs were the first aircraft to be commissioned as a group in the U.S. Navy, and Assistant Secretary F. D. Roosevelt showed his interest in their venture by going to talk with the plane commanders. Bellinger had NC-1, Towers, NC-3, and Read, NC-4. As his pilots Towers had Chester Holden "Dick" Richardson, USN, and Lt. David H. McCullough, USNRF. With Read were Elmer F. Stone, USCG, and Lt. Walter Hinton, USN. In the NC-1 Bellinger had Marc A. Mitscher, USN, and Lt. Louis T. Barin, USNRF, and was happy with them. Mitscher, USNA 1908, was a stubbornly persistent man, moody to the point of grouchiness, who spoke softly and briefly. But Bellinger knew that he, though knowing all aerial tricks, flew conservatively. As for the former beefy acrobat Barin, he had handbuilt two planes and flown them before qualifying as a naval pilot in 1916.

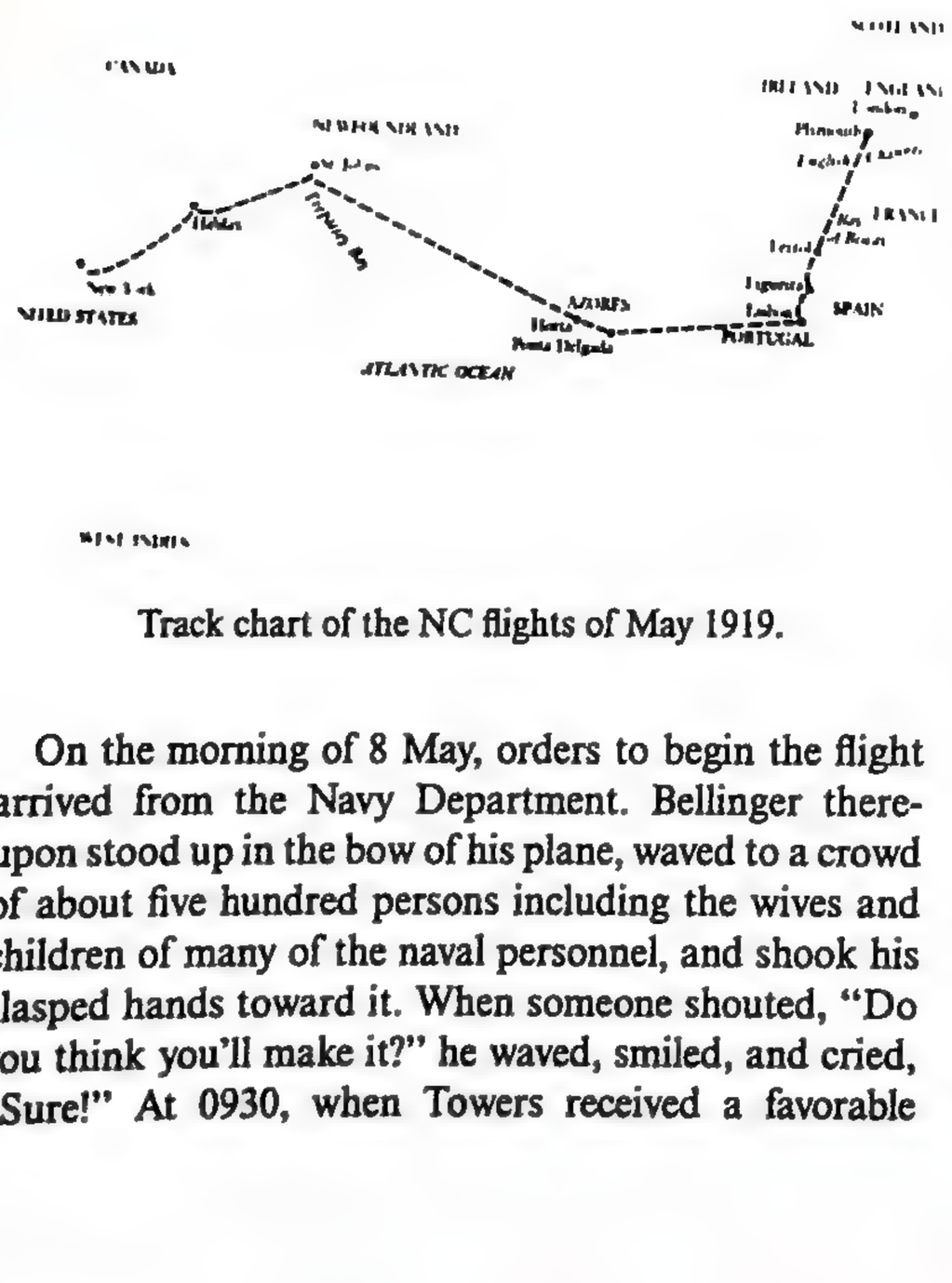
Test followed test until full-load tests were passed. It being decided that one engineer would suffice, the crew of each plane numbered five rather than six.

The Navy Department had arranged for sixty-eight destroyers to be located about fifty miles apart as "marker buoys" between Rockaway and Halifax, Halifax and Newfoundland, and Newfoundland and the Azores, then across to Lisbon, Portugal, and up to Plymouth, England, the last chosen presumably because the *Mayflower* had sailed from there. In addition five

battleships were stationed four hundred miles apart, and foreign naval and merchant ships were notified about the flight plans.

On Sunday evening, 4 May, Bellinger saw his NC-1 safely in its hangar and left the station. Ten thousand pounds of gasoline would be pumped into her from barrels by portable electric pumps during the night. When he returned to the station the following morning, he learned that during the night a fire in an electric pump had ignited gasoline being pumped into her, burned the right wing beyond repair, and also damaged the horizontal rudder of the NC-4, which was backed close to the NC-1. What to do? Would he be put out of the flight? He was overjoyed when Naval Constructor Richardson agreed to take the undamaged wing of the NC-2 from storage and install it on the NC-1.

Three days later, upon returning from their test flight, Mitscher and Barin told Bellinger that the right wing was so heavy that even their combined strength could not keep the plane on an even keel. The trouble lay with some unbalanced portion of the ailerons. Workmen turned to. When they had finished, the NC-1 was still slightly wing heavy but not prohibitively so. Bellinger therefore told Towers that he was ready.



Track chart of the NC flights of May 1919.

On the morning of 8 May, orders to begin the flight arrived from the Navy Department. Bellinger thereupon stood up in the bow of his plane, waved to a crowd of about five hundred persons including the wives and children of many of the naval personnel, and shook his clasped hands toward it. When someone shouted, "Do you think you'll make it?" he waved, smiled, and cried, "Sure!" At 0930, when Towers received a favorable weather report from Nova Scotia, he said, "Well, boys, let's go," and the pilots started their engines. Beginning at 1000, the NC-3, then the NC-4, and finally the NC-1 took off for what the *New York Times* said was "a seemingly impossible destination: Europe."[6] Their first step would be Halifax, 540 miles away.

Despite great efforts in designing the NC planes there were torture areas in them. The open nose compartment was used by the commander-navigator. Two pilots used open compartment number 2, gasoline tanks occupied three and four, and five held another gas tank, the radio operator, mechanic, and engineer, and the radio direction-finding station. When navigating, Bellinger dropped to his knees because if he stood up he was too high for his table and if he sat down he was too low. When he inspected aft he had to squeeze through a narrow passageway along the gasoline tanks. It took him at least a minute and a half to reach the stern while crawling and squirming on his hands and knees, the latter of which became badly bruised.

The first leg of the flight followed the south shore of Long Island, then turned north toward Cape Cod and so on to Halifax. When Read's NC-4 had engine trouble, he landed and taxied to NAS Chatham, where the bad engines were changed. In consequence of her need of repairs, some newspaper reporter nicknamed her the "lame duck." After the NC-1 and NC-3 landed at dusk at Halifax, Mitscher and Barin complained to Bellinger about lateral balance, for the wings on the NC-1 had been installed incorrectly. Both men were exhausted from having had to apply continual pressure on the aileron control to keep the plane on an even keel. To avoid further physical punishment of his pilots, Bellinger ordered ten and a half gallons of water put into the left wing-tip float and so balanced the plane. The crew then spent the night on the cruiser *Baltimore*.[7]

Bright and early next morning commanders inspected their planes. Both Towers and Bellinger found cracks in their propellers. Fortunately, Byrd, who would fly with Towers as far as Newfoundland, knew that there were spare ones at the Canadian naval air station nearby he had commanded during the war. Towers sent him to get them. They were installed, but departure was delayed to the morrow. And where was the "lame duck"? While waiting for Towers to take off, the NC-1

6. *New York Times*, 9 May 1919, 2:1.

7. Bellinger, "Gooney Bird," p. 167; Hy Steirman and Glenn D. Kittle, *Triumph: The Incredible Saga of the First Transatlantic Flight* (New York: Harper & Bros., 1961), pp. 51-52.

had almost fouled a buoy. After Bellinger shouted and waved, Barin stopped the motors and with herculean effort hoisted himself out of the cockpit and joined Bellinger in pushing the plane away just in the nick of time. With Barin suffering a sprained wrist, Mitscher had to fly to Trepassy with a one-armed co-pilot.

But Towers, too, was having trouble. With an electric starter engine having stripped its gears, at 0845 he signalled Bellinger to go ahead, and Bellinger confessed to being thrilled at being on his own and entirely responsible for his plane and crew. This would also be his first extended test as navigator using skill at dead reckoning, for he found the instruments he had to be of little use. Included was a radio compass which suffered from ignition disturbances because it was designed for a two-engine plane and the NCs had four engines and forty-eight spark plugs with unshielded ignition leads.[8]

After a five-hour flight to Trepassy Bay, Bellinger and his crew went aboard the tender *Aroostook*. Towers arrived four hours later. During the night the planes were refueled, but the weather remained unfavorable until the fifteenth. Yet Bellinger, Mitscher, Richardson, and Towers flew single-engine flying boats carried by the *Aroostook* and familiarized themselves with Trepassy Bay and its tricky winds until fog closed in. Feeling the pressure of time, Towers gave the word and the NCs were manned. Given his heavy load and westerly crosswinds, he failed for two hours to take off. So did Bellinger. With the pilots soaking wet and cold, Towers called it a day. Then Read sent a radio message saying that Towers should wait for him because he had a very important suggestion to make. He joined up on the next day. Bellinger later learned that his suggestion was that one out of three planes had a better chance than one out of two.[9] How true!

Late on the afternoon of 16 May, although the weather was favorable, Towers failed twice to take off. He lightened ship and made it on his third try. Read soon followed. Bellinger knew that he must get up before he hit the six-foot swells at the outer end of the bay. He was up to thirty knots but could go no faster. Putting his hands on the floor of his boat, he could feel the water pressure against the wooden boards that were a mere seven-sixteenths of an inch thick. As she approached the entrance of the bay the NC-1 picked up a bit of speed, then more, and after porpoising three times was airborne. She was over the Atlantic and on her way across. "Next stop the Azores," joyfully said Bellinger.[10] Upon learning that the NCs had taken off, American newspapers rushed extras to the streets.

While flying at six hundred feet above the sea in cold and wind almost beyond his endurance, during the late afternoon Bellinger occasionally saw the NC-3 and NC-4 and the station destroyers whose bows pointed the course to follow. As the sun faded, the other planes disappeared (the NC-3's lights failed to work anyway) and Bellinger was alone and acting independently. After it was dark, he squirmed through the tunnel leading aft to check with the engineer and radioman and to take drift sights with float lights. "Everything was beautiful" during the night, he recalled, when all hands ate sandwiches and drank coffee.

The NC-1 had passed over seventeen station ships when at six hundred feet a thick fog bank blotted out the horizon and raised the horrifying specter of a spin. Weather conditions worsened during the following morning. Barin and Mitscher took the NC-1 up to twenty-five hundred feet in the hope of topping the fog layer. They failed. At thirty-five hundred feet the fog lay below for twenty minutes. But fog and huge clouds then settled in so that from the bow Bellinger coud not see his plane's wing-tips. His pilots flew with one hand and used the other to continuously wipe goggles and instruments. The plane went out of control twice but was righted, with his pilots crediting Bellinger with being "a human instrument" because he could sense the least slip the plane made. He in turn credited their good judgment for avoiding a spin into the sea.[11] The NCs had no hydraulic controls or even reduction gears, and moving ailerons, elevator, and rudder by brute force was greatly exhausting.

With no sun to get a sight on Bellinger figured from dead reckoning that he must be approaching Fayal and asked his pilots if they should lower altitude. When they agreed to do so, he ordered the plane down below the fog to see what the situation was like on the deck. Mitscher leveled off and flew at seventy-five feet altitude in overcast weather, poor visibility, and bumpy air. At 1130 Bellinger got a sun line with his sextant but did not trust

8. Bellinger, "Gooney Bird," pp. 168-69; Steirman and Kittle, *Triumph*, pp. 73-74.

9. Bellinger, "Gooney Bird," pp. 169-71; Steirman and Kittle, *Triumph*, pp. 77-81.

10. Bellinger, "Gooney Bird," pp. 173-74.

11. Ibid., pp. 175-77; Theodore Taylor, *The Magnificent Mitscher* (New York: W. W. Norton, 1954), pp. 63-64.

it. Then, with no sun, land, or ship in sight, he decided to land and obtain radio compass bearings on the watchdog destroyers. The plane landed about a hundred miles west of Flores Island at 1310 with the wind at 22 knots, a cross sea, and twenty-foot swells. The landing was so rough that Bellinger thought that he would be thrown out of the plane and wondered how it had withstood such a beating.

From seventy-five feet the water appeared smooth to Bellinger, but depth perception over water is very difficult. In any event, he ordered his radioman, who could not obtain radio compass bearings, to send out SOS signals. Worse was yet to come. A wave struck the tail and broke the control wire on a horizontal rudder. As far as flying was concerned, the goose was cooked. He threw over the sea anchor, but it carried away. Mitscher made a substitute drogue by making holes in a bucket with a knife, and it held the plane's head into the wind. To stop more wave damage Bellinger ordered the central tractor motor started in order to operate the radio generator and taxied just fast enough to hold position.

The NC-1 lay on the water for five hours before being rescued by a passing ship. (Official U.S. Navy photograph.)

Unable to contact any destroyer by radio, Bellinger looked at his tired and seasick crew, then thought that he looked worse than they did. "I've never been as seasick, tired, and discouraged in all my life," he later recalled. In addition he felt responsible for his failure as a commanding officer to bring his ship safely into port.[12]

Wave action then shook loose the right wing-tip float and broke the right upper wing and aileron. On Bellinger's order, all crewmen available donned lifejackets and climbed out on the left wing and brought it down to horizontal. Having fallen asleep for an instant —without Bellinger's knowing it—Barin had let the plane fall off the wind, which then got under the left wing. Consequently the right wing, without a pontoon, went under the water. When the trailing edge of the lower wing was damaged by waves, Mitscher climbed out with his knife and slit each of its compartments so that the water could flow through it. When he came back he asked Bellinger to dress a badly cut hand. As he applied the dressing, Bellinger wondered why he did so because they would all soon be shark food.[13]

The tow to the NC-1 was shifted to the destroyer *Gridley,* but the plane sank before harbor was reached. (Courtesy Mrs. M. L. Crimmins [Eleanor Bellinger].)

The NC-1 had been on the water for about five hours and was about seventy miles from Horta when a Greek merchant ship appeared, sent over a small boat to take her crew aboard, and took the plane under tow. She had no radio to inform others of Bellinger's plight. Several hours later she shifted the tow to the destroyer *Gridley.* Despite great care in towing, the plane sank. The *Gridley* reached Horta the following morning.[14]

Towers had suffered much as Bellinger had from navigational difficulties, but after landing he turned the nose of his plane into the wind and used the tail as a sail. After drifting backwards for three hundred miles in storm-tossed waters for fifty-three hours he got the NC-3 into Ponta Delgada. However, Read was able to see the southern end of Flores Island through a rift in the fog and laid a course for Horta. When his "lame duck"

12. Bellinger, "Gooney Bird," pp. 177-78, and "Sailors in the Sky: Fifty Years of Naval Aviation," *National Geographic Magazine* 120 (August 1961): 287.

13. Bellinger, "Gooney Bird," pp. 179-80; Steirman and Kittle, *Triumph,* pp. 128-30, 136-39.

14. Bellinger, "Gooney Bird," pp. 180-81; Steirman and Kittle, *Triumph,* pp. 139-43.

reached Lisbon, although he had not crossed it directly, he had taken the first plane across the Atlantic.

Orders from the Navy Department to Towers and Bellinger to follow Read by ship to Plymouth, England, were hard to swallow because they had failed where he had succeeded. Against their wishes, too, they were awarded medals by the Portuguese foreign minister. However, these well summed up the qualities of the American naval aviators by the words "merit, courage, and fidelity." Following festivities for the flyers in London, the latter were ordered to Paris, where various American officials, including the chief of Naval Operations, Adm. William S. Benson, were preparing for the Versailles peace conference. After dinner with Benson, each aviator had to recount his flight experiences. The climax of the stay in Europe was a call upon Pres. Woodrow Wilson.

Domestic honors followed. At a dinner given by the American Flying Club each plane commander was given a gold cigarette case. Then came a dinner hosted by Glenn Curtiss at which the gift was a gold wristwatch bearing a special NC decoration. No orator, Bellinger suffered as he spoke briefly at those gatherings.

Among the many messages of congratulations Bellinger received was one from Assistant Secretary Roosevelt. Other encomiums were showered upon him at a meeting of the Academy class of 1907 held in New York.[15] Still to come, in November 1920, was a Navy Cross awarded by Secretary of the Navy Josephus Daniels in the name of the president.[16]

Neither of his pilots ever hinted that Bellinger had been responsible for the failure of the NC-1 to complete her flight. The plane was all right. The trouble was with navigation, but opinion diverges on this point. Read held that the radio compass operated inefficiently.[17] Carlton D. Palmer, an aerial radio expert, held that Bellinger and Towers got lost because their radio officers had been inefficient while Read's had been efficient.[18] To George Van Deurs, a Naval Academy graduate and aviator, "The decision to add a radio compass installation was made so late that there was not time for adequate testing and calibration. Further, the static generated by the unshielded engine ignition made reception difficult and almost impossible on the RDF loops installed in the rear of the hulls, and the main radio had no power when the plane's engines were not functioning."[19] Mitscher agreed with Van Deurs, saying that the flight proved only one thing, that "any damned fool should have been able to figure that out. Radio direction-finding equipment wouldn't work because of vibration and static."[20]

In 1956, for aid with a term paper, Midshipman Ira Hanna asked Bellinger, "What in your opinion did the NC transatlantic flight of 1919 contribute to the progress of naval aviation?" Bellinger replied, "A lot of publicity that probably helped boost naval aviation."[21] He was correct but too modest. The Wright brothers had shown the potential of powered aircraft in 1903, but the Navy had been in aviation only since 1910. Even if Bellinger and Towers failed to complete their flight, they had pioneered a course in new regions in a relatively new medium, and shown what ocean flyers might expect and what flying boats could stand. At least Read had demonstrated the potential and operational capacity of the NC flying boat, and the transatlantic flight did win for the Navy its first postwar headlines. Flight itself had been no problem. What had to be provided and mastered were navigational instruments that made it possible to fly in fog and darkness. Also to be provided was an aircraft strong enough, as Admiral Taylor had put it, "*to keep the sea in any weather*."

The Portuguese medal awarded the flight commanders well characterized them as men of "merit, courage, and fidelity." To these qualities may be added daring, physical strength and endurance, mental keenness, and professional skill. As for Bellinger, had he not performed exceptionally well for seven years in naval aviation he never would have been honored in being selected as one

15. Bellinger, "Gooney Bird," pp. 182-85. By this time the modified Vickers Vimy with Alcock and Brown had set off from Newfoundland on 16 June and sixteen hours later completed the first nonstop crossing of the Atlantic. The Vimy crashed in a bog near Flifden in County Calway, Ireland, after having flown 1,890 miles.

16. "Program of the Association of the Class of 1907, 20 July 1919," Mrs. Frederick D. Bellinger Papers; Bureau of Navigation to Bellinger, 30 July 1919, Bellinger's Personnel File, St. Louis, Mo.

17. Read to Capt. Thomas D. Craven, director of Naval Aviation, 28 July 1919, National Archives Record Group 72, Records of the Bureau of Aeronautics, Entry 12A, Box 11.

18. Comdr. Carlton D. Palmer, USN (Ret.), Naval Aviator No. 116, "The Pioneer Days of Naval Aviation," *Naval Aviation Museum Foundation* 6 (Fall 1985): 34.

19. Rear Adm. George Van Deurs, USN (Ret.), *Wings for the Fleet: A Narrative of Naval Aviation's Early Development, 1910-1916* (Annapolis, Md.: U.S. Naval Institute, 1966), pp. 203-4.

20. Taylor, *Mitscher*, p. 67.

21. Ira R. Hanna to the writer, 24 October 1984, with enclosures. See also Steirman and Kittle, *Triumph*, p. 140.

of the NC commanders who would attempt to be the "first across."

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A Nickel a Bucket: A History of the North Carolina Shrimping Industry

WILLIAM N. STILL, JR.

SHRIMPING is the most important commercial fishery in terms of monetary value in the United States today.[1] In 1978 shrimp landings were 422.9 million pounds (head on) valued at $385.5 million. Shrimping is the number one fishing industry in North Carolina so far as monetary value is concerned. Yet, in the 1880s R. E. Earll, investigating the state's fishing industry reported that "the fishermen eat very little [shrimp] themselves and throw the bulk of their catch away." As late as the 1930s many North Carolina fishermen referred to shrimp as "pests" that fouled up their nets.

Although records are incomplete, it is apparent that Indians caught shrimp with the use of dipnets, seines, and leafy weirs. The early settlers in colonial North Carolina caught shrimp for local consumption. John Lawson, who traveled extensively in the colony during the first years of the eighteenth century, wrote in a book first published in 1709, "shrimps are here very plentiful and good, and are to be taken with a small Bow-Net, in great quantities."[2] John Brickell wrote in the 1737 edition of *The Natural History of North Carolina* that shrimp were "very restorative and good in Consumptions, Hecticks, and Asthmas. . . ."[3]

Before the Civil War, the southern saltwater fisheries, including those in North Carolina, were of local importance with few exceptions. The availability of fresh seafood was confined almost entirely to the coastal communities, whereas a limited trade in saltfish and shellfish was established with the interior and the Northeast. The most important fisheries were those for shad, sturgeon, mullet, oysters, striped bass, alewives, and drum. No information has been found so far to suggest that shrimp had any commercial value in North Carolina during the first half of the nineteenth century. One source says that shrimp from North Carolina waters were caught and transported to the Philadelphia market in the early years of the century, but does not suggest how the problem of transportation was solved as this was before the use of railroads and steamboats in the state.[4] Shrimp continued to be caught in small "skimnets" and consumed locally, primarily in soup or as bait, but there was no demand for them elsewhere.

In the post-Civil War years newspapers began to mention the local consumption of whole shrimp "boiled and peeled." Also during these years pickled shrimp became common in local markets. Shrimp at this time was sold in quart and gallon containers. The Wilmington *Morning Star* on 22 September 1869 mentioned that taxes were not be collected on shrimp less than four gallons in quantity sold in the markets.[5] According to one source the first shrimp to be shipped out of the state occurred in 1878.[6]

Even if there had been a demand for shrimp, other factors prevented the development of an important commercial fishery. Until the development and utilization of refrigeration, shrimp by its extremely perishable nature was severely limited so far as markets were concerned. Although ice had been used in the United States as a preservative for fish since the 1830s, it was not used extensively as a refrigerant for fish until the 1870s. In the early seventies George Ives of New Haven, Connecticut,

1. This article is part of a project, "The Sociocultural Context and Occupational and Marketing Structures of the North Carolina Shrimp Fishery," funded by the North Carolina Office of Sea Grant.

2. J. Lawson, *A New Voyage to Carolina*, Hugh T. Lefler, ed. (Chapel Hill, N.C., 1967), p. 165.

3. J. Brickhill, *The Natural History of North Carolina* (Murfreesboro, N.C., 1968), p. 262.

4. E. A. Joyce, Jr., and B. Eldred, *The Florida Shrimping Industry* (Tallahassee, Fla., 1968), p. 36.

5. For other early newspaper accounts of shrimp see the Wilmington *Morning Star*, 26 May 1871; New Bern *Daily Times*, 31 May 1871.

6. Carter Broad, *Review of the Shrimping Industry in North Carolina* (Morehead City, N.C., 1949), p. 18.

introduced the iced fish trade into North Carolina. For a number of years, however, ice continued to be scarce in the state, most of it having to be shipped in during the wintertime. In 1889 there were only five ice plants in the state, and by the beginning of the twentieth century the number had increased to only twenty-three.[7] Ice was usually shipped in from the Northeast during the winter months and occasionally obtained when local streams froze over. The New Bern *Daily Journal* mentioned on 13 January 1886 that the Trent River was frozen, and "the fish dealers were busy . . . packing ice for future use. . . . About 200 tons were stored yesterday." Apparently not much of the ice was used as a preservative to ship fresh seafood. The Wilmington *Morning Star* reported in 1884 that "the North Carolina fisheries are the most important in the South Atlantic Coast . . . and yet south of Albemarle Sound they are practically underdeveloped on account of the lack of shipping and refrigerating conveniences."[8]

Inadequate transportation facilities was another factor in retarding the development of markets for the North Carolina fisheries. Although Morehead City and Wilmington, the two largest coastal communities, were served by railroads before the Civil War, most of the small fishing villages were not. Southport, which would be the center of the shrimping industry for many years, would not be reached by rail until 1912. Although boat transportation was adequate, no refrigeration facilities were provided. The same was true of the railroads. And although refrigerator railroad cars were in general use after the Civil War, there is no evidence that they were used to transport seafood from the North Carolina coast to interior or eastern markets until the twentieth century.[9]

Inadequate vessels and inefficient gear were also factors detrimental to the development of a commercially feasible shrimping industry. The only powerboats used in the North Carolina fisheries before the twentieth century were small steam flats used in the shad fishery of the Albemarle Sound. Small rowing and sailing boats were most common in the North Carolina fisheries. Gear was usually simple—gill, cast, dip, fyke, and pound nets were used. Before 1872 most fishermen in the Wilmington area used "skimnets," but in 1872 the shrimp seine was introduced and rapidly replaced the smaller nets. Nevertheless, Earll reported in 1880 that in addition to the seines there were about fifty fishermen engaged in shrimping in New Hanover County with cast and skimnets. Brunswick County fishermen referred to a particular net as a "shrimp net" but we don't know which of the above it was.[10]

California was the first state to consider shrimp fishing to be important commercially. In 1869 eight boats manned by Italian fishermen were engaged in the fishery, using small meshed seines. Two years later Chinese immigrants began shrimping and shipped large quantities of dried shrimp to China. In 1880, 1,200,000 pounds of shrimp valued at $124,000 were landed in California, more than any other state by far.[11]

The shrimping industry in North Carolina at that time was very small and confined to Wilmington, Brunswick County, and vicinity. Earll mentioned that the Pamlico Sound "abounds in shrimp and prawns . . . but they find no market at home, and no one in the region has yet been successful in shipping them away to where they might be better appreciated." He went on to mention that the same was true of Beaufort, Morehead City, and the surrounding area. "There is no local demand for the shimp, and enterprise is lacking to start a trade without outside cities." The same was true of Wilmington although Earll notes that that city was the "most northern city on our Atlantic coast where the shrimp fishery assumes the importance of an actual industry." In 1880 the total landings in the Wilmington area were approximately five thousand bushels, but only about half were sold for food—nearly all locally. The remainder was used for bait and fertilizer. Despite the rail connections with the interior, very little was sent out.[12] The New Bern *Journal* noted in 1884 that the shrimp industry in the Wilmington and Brunswick County area had reached a value of fifty thousand dollars a year. Nevertheless, until the twentieth century low production and primitive or inefficient techniques

7. R. O. Cummings, *The American Ice Harvests* (Berkeley, Calif., 1949), Appendix F. See also H. R. Padgett, "The Marine Shellfisheries of Louisiana" (Ph.D. diss., Louisiana State University, Baton Rouge, 1960), pp. 95-96; and O. E. Anderson, Jr., *Refrigeration in America* (Princeton, N.J., 1953), pp. 175-77.

8. 14 November 1884.

9. Wilmington *Morning Star*, 31 May 1912; Carteret County *News Time*, 11 October 1955; Anderson, *Refrigeration in America*, pp. 150-51.

10. Wilmington *Messenger*, 13 January 1893.

11. R. E. Earll, "North Carolina and Its Fisheries: Part XII," *The Fisheries and Fishery Industry of the United States, Section II*, ed. G. B. Goode (Washington, D.C., 1887), pp. 803, 810; F. F. Johnson and M. L. Linder, "Shrimp Industry of the South Atlantic and Gulf States with Notes on Other Domestic and Foreign Areas," *Investigational Reports of the U.S. Bureau of Fisheries*, vol. I (Washington, D.C., 1934), 63.

12. Earll, "North Carolina and Its Fisheries," pp. 802-3.

had characterized the shrimping industry in the state.

During the first decade of the twentieth century the South Atlantic and Gulf states became the center of the shrimp industry in the United States. In 1908 the catch of shrimp in the region was slightly over 18 million pounds, approximately 95 percent of the total caught nationally.[13] During these years the industry in North Carolina made steady but slow progress, still being confined primarily to the southeastern corner of the state. The *Southport News* in October 1914 reported that:

> The fish business has been the shrimp, or to be correct, the prawn has and continues to engage the attention of all the local toilers of the sea. The way was shown how the prawn could be scooped up by net, and at once the fisherman prepared and went after the prawn or "big shrimp" going along the coast to the Southward as far as Lockwood Folly. . . . The prawn industry has proven profitable all around and given employment with good wages while the fishermen have taken for the times big money as can be seen when a boat's crew catches anywhere from ten to fifty bushels and receives for them from $1.10 to $1.30 a bushel. Shrimp catching has been so profitable that other kinds of boat fishing have been passed by, the results being that the local market has for ten days been scarce of fish.

The Wilmington *Morning Star* noted on 27 September 1912 that the completion of the Wilmington, Brunswick & Southern Railroad to Southport had resulted in the establishment of a firm to pack and ship by railway express fresh seafood. By 1914 shrimp (headed and iced) were being sent by rail to northern markets. On 5 November the *Southport News* reported that two days before, three hundred bushels were sent by refrigerator car to New York City. (However, the *Brunswick News* noted on 29 October 1925 that riverboats continued to carry barrels of shrimp from Southport to Wilmington.)

Although the southeastern counties dominated the commercial shrimp industry during the first decades of the twentieth century, some shrimp was shipped to eastern markets from the Carteret County area. One article in the *Atlantic Fisherman* mentioned that "the inception of the commercial shrimp industry (in the southern states) is often connected with Charles S. Wallace, who in 1907 first shipped shrimp from North Carolina to New York."[14] Wallace was a Morehead City fish dealer.

In the period just prior to World War I, two developments stimulated a revolutionary growth in the shrimping industry in North Carolina. A group of Southport businessmen contacted fish dealers in a number of northern cities and, on the basis of information received, decided to build a shrimp canning factory in Southport. By the summer of 1915 this cannery was in operation and was so successful (employing 150 to 200 individuals and producing ten to twelve thousand cans a day) that a Massachusetts businessman established a second one at Shallotte.[15] The development of canneries was a most important factor which made commercial shrimping feasible in the United States during the first quarter of the twentieth century. The advent of canning before the extensive utilization of refrigeration instantly meant the consumption of large quantities of raw products that would not otherwise have found a market. Although the first shrimp cannery was established in New Orleans, Louisiana, in 1867, those in Brunswick County were the first in North Carolina. A third was established at Southport in the 1920s but the depression apparently resulted in a collapse of the industry.[16]

Even more important than the canneries in the growth of the shrimp industry was the adoption of the otter trawl. It has been called the greatest innovation in fishing gear. The development of the powerboat towards the end of the nineteenth century and its rapid adoption by commercial fishermen made the otter trawl practical. The otter trawl was developed from the beam trawl in England and introduced in the New England fisheries in the 1890s.[17]

The otter trawl revolutionized shrimp fishing. Whereas the haul seine could be used only in shallow waters and required a large crew, the shrimp trawl could be used offshore or in deep water, needed fewer men to operate, yielded a greater production per man, and was a much more efficient type of gear.[18]

When fishermen first adopted the otter trawl for shrimping is somewhat unclear. Between 1912 and 1914 the U.S. Bureau of Fisheries used a small otter trawl for collecting marine forms at its Beaufort, North Carolina, center and it was reported that large quantities of shrimp were taken during the hauls. Also, in 1913, a

13. G. M. Woodward, *Commercial Fisheries of North Carolina: An Economic Analysis* (Chapel Hill, N.C., 1956), p. 81.

14. *Atlantic Fisherman* XXXIV (September 1953), 21.

15. Southport *News*, 8 November 1915; Wilmington *Morning Star*, 18 March, 26 April, 30 December 1915.

16. Carteret County *News Time*, 11 October 1955; Padgett, "Marine Shellfisheries of Louisiana," pp. 139-40.

17. A. C. Jensen, *A Brief History of the New England Offshore Fisheries* (Washington, D.C., 1967), p. 6.

18. W. W. Anderson, M. J. Lindner, and J. E. King, "The Shrimp Fishery of the Southern United States," *Commercial Fisheries Review* (February 1949), pp. 1-17.

group of Portuguese immigrants used otter trawls for shrimping near Fernandina, Florida.[19] There is no evidence that the two incidents were connected in any way. What is apparent is that the otter trawl was immediately accepted by shrimpers and by 1927 was in widespread use in the South Atlantic and Gulf regions. The result was a substantial increase in the shrimp catch. From 18 million pounds landed in 1908 it jumped to 48 million in 1918.

The exact date of the introduction of the otter trawl in North Carolina waters is also unknown. It was before 1916, however. In March of that year the *Wilmington Dispatch* noted that a young New Jersey fisherman, Samuel Thompson, was the one "who brought the first deep-sea shrimp net to Southport . . . and taught the Southport fishermen to catch shrimp." In September 1916, the Wilmington *Morning Star* mentioned the use of "large drag nets" to catch shrimp in the ocean. The paper estimated that there were fifty boats by the end of the year using the new gear. Other types of gear such as hand seines, cast nets, push nets, and even pound nets began to be used in the 1920s, but trawls rapidly became the primary gear for shrimping. In 1928, 692,696 pounds were caught in trawls compared to 139,214 by seines, 1,478 in pound nets, and 11,895 in push nets.[20] By 1945 it is estimated that approximately 95 percent of the shrimp caught in the North Carolina fishery was caught by otter trawls.

Until the adoption of the otter trawls, many of the shrimpers operated without floating equipment since most shrimping was done in shoal waters close to the shore. What vessels were used were nondescript—sailing vessels, rowboats, and other nonpowered boats. The appearance of the otter trawl resulted in the development of vessels designed for shrimping. The earliest trawlers were open skiffs, ranging from fifteen to twenty feet long powered by small gasoline engines.[21] By the early 1920s the first "decked" trawlers were in use. This design is still in use today. The type of vessel was apparently developed from the so-called Mediterranean work boat similar to the Greek boats used in the sponge fishery off the west coast of Florida.[22]

During the post-World War I years the shrimp industry grew rapidly in the United States. By 1931 it was sixth in importance with respect to volume and seventh in value among the food fishery products of the United States. Although North Carolina's contribution remained low (less than 1 percent) during these years, the industry, nevertheless, prospered. The peak year was 1923 when 1,658,000 pounds of shrimp valued at fifty-one thousand dollars were caught. In that year 998 refrigerator cars were used to carry the shrimp to eastern markets. By 1925 more than three hundred fishermen were engaged in shrimping, nearly all from Brunswick County.[23] Although these figures clearly indicate that North Carolina's shrimping industry was expanding, it was still small in comparison to the Gulf states as well as Florida and Georgia. In 1923, for example, Georgia's landings totaled over 10 million pounds and Florida's over eleven million. It would be over twenty years before North Carolina's landings reached 10 million.

Two factors were primarily responsible for the small but prosperous North Carolina shrimping industry in the twenties, viz., the proximity of the state's shrimping grounds to the eastern markets, and the utilization of refrigeration. In 1922 one of Florida's largest packing houses erected a plant at Southport because of the "short time delivery" to New York City. Fresh shrimp could reach the Fulton market in less than twenty-four hours from the packing house.[24] Throughout the years the proximity of North Carolina to the eastern markets greatly benefited the state in developing its seafood industry.

North Carolina also benefited from the increasing use of refrigerator cars to transport seafood. Although the concept of freezing fish was introduced in the nineteenth century it did not spread into the southern states until the twentieth century. However, as late as 1926 only little more than 1 percent of frozen fish came from the South

19. Johnson and Lindner, "Shrimp Industry of the South Atlantic and Gulf States," p. 9; F. J. Captiva, "Trends in Shrimp Trawler Design and Construction Over the Past Five Decades," *Proceedings of the 19th Annual Session of the Gulf and Caribbean Fisheries Institute* (1967), pp. 23-30.

20. A. F. Chestnut and H. S. Davis, *Synopsis of Marine Fisheries* (University of North Carolina Sea Grant Program Publication, 1975), pp. 287-88.

21. Captiva, "Trends in Shrimp Trawler Design," p. 24.

22. M. J. McKenzie, "Description of Industry: Harvesting Sector," *The Shrimp Fishery of the South Atlantic United States: A Management Planning Profile* (South Carolina Marine Resources Center Technical Report Number 5, 1974), p. 40; M. E. Stansby, *Industrial Fishery Technology* (New York, 1963), p. 166.

23. *Biennial Report of the North Carolina Department of Conservation and Development* (Raleigh, 1926). See also the *Christian Science Monitor*, 6 November 1926; and the Wilmington *Morning Star*, 18 August 1923.

24. Wilmington *Morning Star*, 8 May 1922.

Atlantic and Gulf states. In that year, of the 169 packing houses that handled frozen fish in the United States, none was located in North Carolina.[25] Refrigeration in North Carolina was affected primarily by icing down fresh shrimp in barrels or boxes for shipment. In 1919 the first company to pack and ship fresh shrimp was formed in Southport. In 1923 this company shipped thirty refrigerator cars of shrimp to various parts of the United States.[26] Although refrigerator motor trucks were introduced in the 1920s, none was used in North Carolina. By the late twenties with the development of an efficient road system in the state for instate deliveries, trucks were used but they were not refrigerated. It was the thirties before trucks replaced refrigerator cars to carry shrimp to eastern markets.[27] It took a truck approximately twenty hours to reach the New York markets.[28] The shipment of iced fresh shrimp to markets would continue to be the principle method of shipment through the 1960s.

In 1931, 46,481,000 pounds of shrimp were caught in the South Atlantic and Gulf states, about 25 percent of which represented the landings in North and South Carolina, Georgia, and the east coast of Florida. North Carolina's contribution was less than one-half percent, and 1.53 percent in the areas, respectively. This prompted Johnson and Lindner to state that North Carolina was of no great significance as a shrimp-providing state since it represented the northern limit of commercial abundance.[29]

Although the state was the northern limit of common shrimp of commercial abundance, the two authorities were wrong concerning the fishery's potential importance. Their conclusion may well have been influenced by the years 1931 and 1932. In those years the shrimping season was poor, "both from the standpoint of sales and catches" according to the Wilmington *Morning Star*.[30] Only 338,273 pounds of shrimp were caught in 1931 with a value of fourteen thousand dollars. This was 26 percent of the 1930 catch. The director of the state's Division of Commercial Fisheries blamed much of the season's failure on forest fires. "The smoke was so dense for weeks . . . in Brunswick County where the bulk of our shrimp are caught that the fishermen did not dare put to sea."

During the twenties and early thirties Brunswick County continued to be the center of the state's shrimping industry. In Southport alone sixty-two boats were engaged in shrimping in 1931. During the early thirties between five and six hundred individuals in Southport (including transients who came in with boats from other areas) were employed in the shrimping industry. Approximately half of these, of whom the majority were employed as seasonal and part-time workers, were employed in the packing houses.[31] By the mid-thirties there were nine packing houses scattered along the waterfront and more than two hundred boats from North Carolina and the South Atlantic states concentrated in the Southport area during the peak season starting in September and continuing through November. Shrimping had become the community's most important industry. The small port's population mushroomed during the season with hundreds of migrant fishermen arriving, many of them bringing their families. The editor of the Southport *State Port Pilot* recalled his first months there in the mid-thirties when living on the waterfront, his sleep was rudely shattered by the discordant sound of many noisy gasoline engines as the trawlers moored along the docks in the harbor prepared to leave.

Shrimping was done in the daylight hours. Ice would be loaded on board either from the packing houses or trucks and the vessels would then get underway for the shrimping grounds. The boats usually returned to port early in the afternoon because of the shrimp's perishable nature. By nightfall all were in, and in the nine packing houses that were in business in Southport by 1936, several hundred "pickers," the majority being black, began to head the shrimp. Local residents and newspaper accounts recall that during peak season when the deheading would continue late at night, frequently into the early morning hours, you could hear "much singing, real melody floating up from the picking houses."[32] The "pickers" were paid a nickel a bucket. When full shrimping commenced in Southport the local news-

25. *Report of the Commissioner of Fisheries* (Washington, D.C., 1926), pp. 506-7. See also J. M. Lemon, "Developments in Refrigeration of Fish in the United States," *Investigational Reports of the U.S. Bureau of Fisheries*, vol. 1 (Washington, D.C., 1936), 2-3.

26. Wilmington *Dispatch*, 1 February 1920.

27. Wilmington *News*, 4 September 1935; Theodore Jones interview, Southport, N.C., 1979.

28. For an account of the origin of truck refrigeration see the *Southern Fisherman*, Annual Review XVII (1957), 298.

29. Johnson and Lindner, "Shrimp Industry of the South Atlantic and Gulf States," p. 6.

30. Wilmington *Morning Star*, 10 September 1932.

31. Wilmington *Morning Star*, 15 August 1931; 18 April 1932.

32. Southport *State Port Pilot*, 27 July 1938.

paper announced its opening by exclaiming, "nickel time is here." In September 1938, the *State Port Pilot* wrote,

> It is no news that all of the shrimping packing houses pay off their labor each day with nickels. It is all piece work, the completed piece being a bucket full of headed shrimp and the pickers receiving a nickel as fast as the buckets are delivered at the washing vats. To carry on the business the banks will soon be calling for thousands of nickels daily from other banks. The most common form of currency for barter at the stores will be nickels. Some of the nickels will pass and repass through the wet hands of the pickers so often that they will have a far from pleasing smell when they become dry.[33]

As the shrimp were headed they were packed in boxes with ice and stored in trucks. When the trucks were loaded, frequently early in the morning hours, they left for the eastern markets.

Brunswick County's near monopoly of the shrimping industry was short-lived. Even in the 1930s the industry was beginning to spread northward. Shrimping was done in Carteret County and the surrounding area before the thirties but it was mainly by pound and haul nets.[34] The 1930 report of the director of the state's Division of Commercial Fisheries mentions for the first time shrimping in Carteret County. The *Beaufort News* mentions shrimping for the first time in its 1 May 1930 issue: "Necessity is the mother of invention, and when the fishing slackened up, the fishermen turned to shrimping for a livelihood." A Florida firm located a packing house and six shrimp trawlers at Beaufort in 1933.[35] Commercial shrimping also reached Pamlico County for the first time in the late 1920s according to a local fisherman and were caught in pound nets: "very few people," he said, "ate them and laughed at those that did." He also mentioned that the first shipment of shrimp from Pamlico County was by truck to Winston-Salem in 1927.[36] In the thirties fishermen from Carteret County and the surrounding area joined other migrant fishermen in the Southport area. These "down homers" as they were called locally, came down to learn and engage in shrimping. When they returned north they carried their nets and boards with them.[37]

According to Mr. Theodore Jones, former manager of the Belhaven Fish & Oyster Company, it was 1937 before fishermen in the northern Pamlico Sound area began shrimping. A Baltimore Seafood Company sent at its own expense a shrimper from Louisiana to demonstrate shrimping to fishermen in the area. Under his guidance nets and boards were obtained from Louisiana and a number of local boats, which had been used primarily for pulling haul nets and oystering, were rigged for shrimping.[38]

Shrimping was negligible in the Onslow County area until the 1940s although some were landed in the 1920s. The first year that landings were recorded was 1928, and slightly over four thousand pounds of shrimp were caught in that year.[39]

Shrimping in the northern counties was both near shore and in the estuaries. Some shrimping was done in Pamlico Sound but in 1934 the Board of Conservation and Development closed the Sound to shrimping with trawl nets because of the belief that it was hurting the finfish industry by catching and destroying small fish in the nets. The following year the regulation was modified to permit trawling for shrimp in the sound from 15 August to 1 December.[40]

The director of the state's Division of Commercial Fisheries wrote in his 1940 report that "in years past the greatest activity in the shrimp fishery was at Southport, but for the last several seasons it has been gaining in Pamlico Sound and around Cape Lookout. . . . There are as many as a thousand people engaged in the industry." An article in the Raleigh *News & Observer* dated 12 November 1939 said that Carteret County had caught up with Brunswick in the shrimping industry: "A million lbs. of shrimp were taken during the past week from coastal waters between Albemarle Sound and the South Carolina border. More than half of the total poundage was taken from Core and Pamlico and adjacent waters." In 1937 and 1938 approximately 2 million pounds were caught in both counties, but Carteret had already pulled

33. 28 September 1938. See also Louis Hardee interview, Belhaven, N.C., 1979, and Southport *State Port Pilot*, 22 September 1937. A nickel a bucket was also paid by the packing houses elsewhere in the state. Jones interview and interview of Clayton Fulcher, Carteret County, N.C., 1979. For a description of the shrimping industry in Southport in the thirties see the Southport *State Port Pilot*, 23 September 1936.

34. Carteret County *News Time*, 11 October 1955.

35. *Atlantic Fisherman* XIV (November 1933), 13.

36. M. W. Hardy, *Glimpse of Pamlico County* (Charlotte, N.C., 1978), p. 116.

37. Hardee interview.

38. Carteret County *News Time*, 11 October 1955.

39. Chestnut and Davis, *Synopsis of Marine Fisheries*, p. 387.

40. New rules and amendments passed at the meeting of the Board of the Department of Conservation and Development, 23 July 1934, 9 July 1935, Department of Conservation and Development Records, Division of Archives and History, Raleigh, N.C.

ahead of Brunswick County and has continued to lead in shrimp production.[41]

Although the market for shrimp was still limited in the 1930s, shrimping became popular with the fishermen in the northern counties because the season came between oystering and the fishing seasons. Also their small boats could easily be converted for shrimping and then rerigged for fishing or oystering. Switching activities was certainly not a new phenomenon in the 1930s. Shrimping simply added a new dimension. Because of the migratory nature of shrimp and the switching activities of North Carolina fishermen, a pattern developed in the thirties of either following the shrimp as they moved geographically or switching from one type of fishing activity to another because of seasonal change or the abundance of a particular specie. In the 1930s it became common for shrimpers from Florida, South Carolina, and Georgia, along with the fishermen from North Carolina counties to concentrate at Southport in the late summer and then to move south for winter shrimping. In 1938 Milton J. Lindner, in charge of a shrimp investigation by the U.S. Bureau of Fisheries, wrote,

> The Atlantic Fleet, comprised mainly of boats originating in Florida, migrate from North Carolina to Florida with the concentration of shrimp. As a general rule the summer and early fall fishing is most productive between North Carolina and Georgia. Later, however, as the shrimp migrate southward the fleet also moves southerly and during late fall and winter the shrimp and the fishing fleet are concentrated in the area between St. Augustine and Cape Canaveral, Florida.[42]

The majority of North Carolina fishermen, however, shrimped only during the season. The Southport *State Port Pilot* reported in its 17 December 1935 issue that the shrimping season was over and only twenty-five boats were still shrimping from Southport. The paper mentioned that some boats had gone to Florida, some had returned to Morehead City to get ready for sinknet fishing, while others "had returned to other parts of North Carolina for the winter months." In the Southport area a number of boats were used for both shrimping and sport fishing depending upon the season and the abundance of shrimp or fish.[43]

The expansion of commercial shrimping in the state led to improved technology in vessels and gear. Vessel types continued to range from decked craft down to open skiffs. For example, the Southport *State Port Pilot* in 1936 mentioned that most of the shrimpers from Carteret County were "of the blue fish type of boat. They are adapted for any type of fishing and need only a change of rigging to go from one thing to the other."[44] In the thirties, however, two basic types of shrimping trawlers began to predominate in the state. By that time most of the shrimping in waters off Brunswick County was done offshore, and although the trawling radius was limited to a few miles from the shore, larger, more sturdy vessels were needed. The Florida trawler, which was developed in the state whose name it bears, gradually spread north into Georgia and the Carolinas. In the Florida trawler the engine room is forward and the hold in the stern. It stands high out of the water, with the bow two or more feet higher than the stern. Because it was developed as a shrimp trawler it is considered the most efficient shrimping vessel. In the thirties Florida trawlers ranged up to forty-five feet in length, but the majority were between thirty and forty feet. Although diesel engines were commonly used in fishing vessels throughout the nation in the thirties only one North Carolina trawler was diesel powered before World War II.[45]

In the Carteret County area, the "Core Sounders," so named because it was generally believed that this type of vessel was built in the Core Sound area, became increasingly popular as shrimp trawlers. With their flared bows and rounded sterns, they were considered excellent vessels for shrimp trawling, particularly in estuarine waters. They averaged between thirty and forty feet in length and were powered by gasoline engines.

Although a majority of the boats were built locally or

41. It should be kept in mind that county landings data are, at best, extremely crude estimates of effort and/or abundance in a given geographical area. While shrimp fishermen use small craft and fish near their communities much of the time, larger boats have a greater range and can harvest in one area and land in another very easily. Further, even the smaller craft can easily cross county lines. Thus, landings in a given county may be as much or more a reflection of port facilities and availability of fishermen than abundance of the crop there. John Mailolo, et al., "The Sociocultural Context of Occupational and Marketing Structures of the North Carolina Shrimp Industry: Second Year Report: Vol. I: Historical Development of the Shrimp Fishery" (unpublished MS, Department of Sociology and Anthropology, East Carolina University, December 1980), 16.

42. Milton J. Lindner, "The Cooperative Shrimp Investigation," unpublished MS, 1938, copy in file 823.7-824.1, Records of the Fish and Wildlife Service, National Archives Record Group Number 22, National Archives, Washington, D.C., hereafter cited as RG22. See also the *Atlantic Fisherman* XIX (June 1938), 16; and the *News & Observer* (Raleigh, N.C.), 26 January 1938.

43. Southport *State Port Pilot*, 23 September 1936; 13 July 1938.

44. 23 September 1936.

45. Southport *State Port Pilot*, 21 June 1944.

within the state, the larger Florida-type vessels used in the offshore fishery came from Florida.[46]

During this period nearly all the work on board ship, including pulling the trawl, was done by hand. However, in the late thirties some of the larger vessels were equipped with power winches for hauling in the trawls. These winches were operated either from a separate deck engine or a power take-off from the main engine and used in conjunction with a mast and boom or mast and "A" frame with rope towlines. The separate deck engine and "A" frame were gradually replaced by the winch powered from the main engine and used in connection with a boom.

The technology of locating shrimp also evolved over the decades. When trawling was first introduced, it was a hit-or-miss situation. A number of boats would simply go to a particular area and experiment until shrimp were located. In the Brunswick County area haul seines were occasionally used to determine the location of shrimp while farther north pound nets were used. Carteret County fishermen followed a more primitive method of dragging a long oar through the water while the boat was running at slow speed. The presence of shrimp could be determined when the moving oar disturbed them and caused them to jump out of the water.[47] Small "try" nets were first used in the Gulf and Florida waters and in the late thirties they were beginning to be used in the Southport area.

Shrimp nets were made in Florida or Louisiana. In 1934 Lewis Hardee, a native of Florida, arrived in Southport, opened a packing house, and showed local fishermen how to make the nets. Until the 1940s, however, fishermen farther north continued to purchase their nets elsewhere.[48]

Despite the expansion of commercial shrimping in North Carolina in the 1930s the decade was one of instability in the industry. It started with poor seasons, but from 1933 on, production steadily increased. The quantity went up dramatically from 338,000 pounds in 1931 to over 2.5 million in 1934 to nearly 5 million in 1939. From sixty-two boats shrimping in the Southport area in 1931, more than a hundred were engaged in that enterprise off the Brunswick County port in 1933. Three years later there were more than five hundred fishermen shrimping in that area. The Wilmington *News* noted in its 27 September 1934 issue that

> with a big fleet of boats at work and more coming in daily, the catches of shrimp in the Southport area Monday and Tuesday were the largest in many years. Tuesday night the packing houses became swamped with the product and fearing too much of a congestion of northern markets, the boats were all ordered to remain in and not fish today.

And yet, discontent was widespread among North Carolina shrimpers throughout the decade. In 1938 Southport shrimpers went on strike, refusing to take their boats out.[49]

Low prices received from the dealers for fish and shellfish including shrimp were a major reason for the fishermen's discontent. The underlying cause, however, was the severe depression that gripped the country throughout the decade and the disastrous effects it had on the market. Between 1928 and 1932 the value of the state's commercial fisheries dropped approximately 69 percent. The total return to fishermen from seafood shrank from $2,629,214 in 1928 to $827,000 in 1932. Seafood brought an average price of only nine-tenths of one cent per pound in 1932 compared with 1.9 cents per pound in 1928. In 1931 the average wage of the fisherman in North Carolina for the year was $169.00.[50] Although the prices and wages would fluctuate and gradually climb, the fisherman actually gained very little in purchasing power throughout the period. It would be the outbreak of war before a noticeable improvement occurred.

Not surprisingly, everyone blamed everyone else for his economic problems. Fishermen using haul seines were blamed for glutting the market and driving the prices down; dealers and packers were blamed for the low prices; dealers blamed the government. One dealer even blamed it on "truck peddlers" who purchased seafood from the fishermen and sold it inland. "Why it is absurd to take seafood in an open truck and peddle them all over the country in the sun and rain. . . . Such is

46. Raleigh *News & Observer*, 7 September 1947, Section IV; scattered in issues of the *Atlantic Fisherman* for the 1920s and 1930s, the purchase of Florida-built trawlers by North Carolina fishermen is mentioned. For example see the January 1935 issue.

47. Anderson, et al., "The Shrimp Fishery of the Southern United States," p. 7; Carteret County *News Time*, 11 October 1955; Jones interview.

48. Carteret County *News Time*, 11 October 1955; Hardee and Jones interviews.

49. Southport *State Port Pilot*, 26 October 1938; Wilmington *Morning Star*, 26 October 1938.

50. Etheridge to House Committee on the Merchant Marine, 24 February 1934, Box 7, Activities of the Department, Department of Conservation and Development Records, Division of Archives and History. Raleigh, N.C.; memo to Etheridge, n.d., Box 46, Gov. J. C. B. Ehringhaus Papers, Division of Archives and History, Raleigh.

not sanitary," he complained.[51] By the fall of 1934, with prices paid to fishermen for their products representing the lowest in over two decades, dissatisfaction was widespread along the coast. Strikes were threatened and in one instance five thousand dollars worth of Menhaden nets were destroyed because the operator had caught large quantities of food fish.[52]

Inevitably the fishermen turned to the government for help. Early in October 1934, a committee of fishermen representing most of the coastal counties, met with Governor Ehringhaus and urged "special action to improve (their) . . . plight."[53] State officials conferred with representatives of the U.S. Bureau of Fisheries and government relief agencies and in December a plan was presented to the fishermen to organize a cooperative. The idea was based on a cooperative formed in Maine with the help of the government. Under the proposed plan, the Self Help Division of the Federal Emergency Relief Administration (FERA) and local fishing communities would cooperate to establish facilities for handling, processing, and marketing seafood products. These facilities, which would be purchased with a loan from FERA, would become the property of the fishermen who agreed to join the cooperative.[54]

During the early months of 1935 the state's fishing communities were surveyed and 1,571 fishermen agreed to join the cooperative. The cooperative's organizers attempted to gain the support of dealers by emphasizing that it would not do business with the traditional markets in the Northeast, but would develop new markets in the interior of the state. Nevertheless, the cooperative was opposed by a large percentage of the dealers from the beginning. State and national officials, however, strongly supported it. Herbert F. Prytherch, director of the U.S. Fish Biology Laboratory at Beaufort, favored it. It would increase employment in the industry, stabilize prices, and "ensure equitable return to the fishermen," he stressed in a letter to the FERA.

> A very commendable feature of your program is that it will not offer serious or unfair competition to private concerns engaged in the fishing business but will actually be of direct benefit to them by providing facilities for preservation and storage.[55]

The state agreed to purchase substantial amounts of seafood from the cooperative for its educational and correctional institutions. The cooperative's organizers applied for a loan from FERA to purchase equipment and facilities and despite Harry Hopkins's (head of FERA) initial opposition, a $139,000 loan was approved in July 1935. In recommending approval one FERA official wrote:

> North Carolina has no plant for the processing of (frozen) seafood products and therefore cannot supply its inland market. This has resulted not only in restrictions of fishing activities but furthermore, in the utter waste of one third of all seafood caught. The present per capita seafood consumption in North Carolina is about one half of the national average. . . . Along the 150 miles of North Carolina coast line many native fishermen are on relief. There is no chance for them to gain subsistence through farming or other work. Work relief projects are only a temporary help. . . . Of the 1,571 (fishermen who have joined the cooperative) 824 are now on relief, 519 are certified as eligible for relief and most of the rest on the borderline.[56]

With the support of local communities and the state, the newly created self-help cooperative began establishing its facilities. Morehead City, Manteo, Southport, and Belhaven all supplied sites, some funds, and tax incentives. The main plant was built at Morehead City. It included a receiving facility, cold storage and freezing plant, canning facility, and offices. A small fish-handling facility was established at Manteo, an oyster shucking plant at Belhaven, and a house principally for canning and shipping shrimp was built at Southport. In addition, the cooperative, which took the name North Carolina Fisheries, Inc., purchased a fleet of refrigerator trucks to carry the seafood to the interior market.[57] While the physical facilities were being constructed, the cooperative was being organized. Out of the more than fifteen hundred applicants, four hundred fishermen were initially approved for membership.

51. Lee to Luther Hamilton, 12 February 1931, Box 80, Gov. Max Gardner Papers, Division of Archives and History, Raleigh.

52. "The origin of North Carolina Fisheries, Inc., . . . ," 15 January 1936, Box 44, Records of the Works Projects Administration, National Archives Record Group 69, National Archives, hereafter cited as RG69.

53. Kelly to Etheridge, 2 October 1934, administration and correspondence, 1925-1935, Department of Conservation and Development Records, Division of Archives and History, Raleigh.

54. Nelson to Etheridge, 27 October; Kell to Etheridge, 14 November 1934, in administration and correspondence, 1925-1935, Department of Conservation and Development Records; Stone to Nelson, Box 46, Governor Ehringhaus Papers; *Emergency Relief in North Carolina* (Raleigh, N.C., 1936), p. 341; *News & Observer*, 1, 3 January 1935.

55. To John Sikes, FERA, Raleigh, 8 February 1935, Box 44, RG69. See also the Elizabeth City *Independent*, 24 May 1935.

56. A. Brower, Division of Purchases and Contracts, to Etheridge, copy in Box 44, RG69; Jacob Baker to Hopkins, 20 June 1935, Box 44, RG69. There were approximately five thousand individuals, including part-timers, engaged in commercial fishing in 1934.

57. N. K. Fairbanks, "Field Report on North Carolina Fisheries, Inc.," 6 August 1935, Box 44, RG69.

The Morehead City plant went into operation early in October 1935, followed a few weeks later by the other plants. From the beginning the cooperative operated in the red. Gross sales were twenty-five thousand dollars in October, thirty-three thousand in November, and twenty-two thousand in December, but expenses resulted in a loss of approximately ten thousand dollars for the three-month period. This was partly because of initial expenses, but also because the 1935-1936 fishing season was a poor one. Although the amount of seafood processed by the Morehead City plant would gradually increase, because of the deficiencies in the smaller plants, the cooperative would continue to lose money. In 1936 the Manteo and Belhaven plants were closed and the Southport facility was closed two years later.

In the Southport facility, both fresh and canned shrimp were supposed to be processed. The cannery was never put in operation, and the processing of fresh shrimp was never profitable. North Carolina Fisheries was apparently unsuccessful in its efforts to increase the consumption of shrimp in North Carolina and in order to sell the seafood, the company began competing with the independent dealers for the northern market.[58]

The cooperative was controversial from the beginning. The majority of fishermen favored it, because the cooperative paid a set price, usually slightly higher than that paid by the independent dealers. Even the fishermen who did not belong to the cooperative were permitted to sell to it. Not surprisingly, the strongest opposition came from the independent packers and dealers who claimed that their business was hurt by unfair competition with them. This was primarily because the effort to establish new markets in the interior was not successful, and in order to sell the processed seafood northern markets were used.[59]

The cooperative tried various ways to develop the interior market, from educational programs in the schools and radio advertisements, to sending salesmen to call directly upon retail outlets such as grocery stores, hotels, and restaurants.[60] Little success was achieved. "The sales organization of the North Carolina Fisheries Inc. (has) failed to provide the promised markets within the state," the editor of the Southport *State Port Pilot* wrote in December 1935. "The reason that there was no demand for shrimp in North Carolina this fall is because 85 percent of the citizens of the state never saw a shrimp in their lives." In 1938 near Weldon a truck carrying a load of shrimp turned over and spilled its cargo along the road. Onlookers could not identify the shrimp.[61] The *News & Observer* noted on 9 December 1940 that "hardly more than an average of four or five hundred pounds of the local catch (of shrimp) is consumed in North Carolina."

The *Wilmington News* noted on 4 September 1935 that "up to the present time something over 98 percent of North Carolina production of (fresh) shrimp has been disposed of in New York." When the cooperative went out of business early in the war years, the percentage of shrimp shipped out of the state was approximately the same. Although statistics have not been located on other seafood, apparently the market pattern for all North Carolina seafood changed little in the thirties. The principal markets continued to be Baltimore, New York, Philadelphia, and other urban areas in the Northeast. Very little was marketed in the interior. (An article in the *Atlantic Fisherman* in November 1938 described a transition going on in the distribution of shrimp. "Ten years ago frozen shrimp was destined to the Far East, fresh shrimp to New York, and canned shrimp . . . to the local grocery stores. . . . Today the Middle West, and Far West, the South, and the North are all consumers of shrimp in large quantities." This transition obviously did not occur in North Carolina's shrimp industry.)

This failure occurred despite the introduction of frozen seafood by North Carolina fisheries. The cooperative established the first freezing plant for seafood in the state which enabled the company to introduce the concept of freezing during the season and selling in the off season when prices would be higher. It also enabled the company to introduce the process of selling frozen fish fillets for the first time in the state. These fillets were gradually accepted in the interior, and if the company had continued, more than likely, they would have received much wider distribution.[62]

58. Southport *State Port Pilot*, 2 October, 27 November, 18 December, 1935, 16 August 1936, 22 December 1937, 21 November 1938; Raleigh *News & Observer*, 21 November 1935, 15 August 1936.

59. For varying opinions concerning the cooperative see the records in Box 44, RG69; correspondence in Box 44, Governor Ehringhaus Papers; Southport *State Port Pilot*, 11 December 1935, 1 September 1937; *The Fish and Oyster Reporter*, December 1935, p. 4; Hardee interview.

60. Prescott to Mrs. Thomas O'Berry, administrator, North Carolina FEFA, 17 June 1935, Box 44, RG69.

61. Jay Jenkins, "The Shrimp Chasers," *The State Magazine* XVIII (10 June 1950), 5.

62. *Emergency Relief in North Carolina*, p. 343; memorandum dated 3 November 1936, Box 44, RG69. Apparently very few shrimp were frozen by the company.

Although the cooperative never made money (individual fishermen who sold to it did), the government insisted that it was a success. As one official of the FERA wrote, "the cooperative was started not so much with the purpose of making it immediately self-sustaining, but with the object of aiding some 1,500 families along the North Carolina coast whose breadwinners were listed as fishermen but were largely on relief." And when President Roosevelt received an inquiry from Massachusetts about support for a similar cooperative, the president was informed that "the North Carolina Fisheries are beginning to demonstrate that they are an aid to a considerable extent to the fishermen of that section of the coast."[63]

North Carolina Fisheries closed down its operation after the 1940 season and despite local efforts to revive it, the cooperative never reopened. The buildings were later sold and the freezing plant would reopen under private ownership in 1942. World War II finally ended the depression and for most Americans a return to prosperity or at least economic normalcy occurred. This probably happened to North Carolina fishermen and suggests one reason why the cooperative folded up. It simply was no longer needed. Relief was no longer needed as the war, with its resulting extraordinary demand for food products, brought about a rapid rise in prices. Fish dealers could get higher prices and without the price differential the cooperative could no longer attract the fishermen. That combined with the end of government subsidization in the form of loans and its inability to create new markets led to the cooperative's demise.[64]

World War II created severe problems for the fishing industry in the United States. The harvest level in 1942 declined by nearly a billion and a half pounds over that of the previous year. The demand for military necessities resulted in a significant drop in the construction of new fishing boats. In addition some seven hundred fishing vessels were actually taken over by the government during the war years. Also, hundreds of vessels were laid up at various times because of severe shortages in spare parts for engines and fishing gear. Worn-out gear could not be replaced. Fish nets could not be obtained and twine and cordage were scarce.[65]

The manpower problem became critical in the fishing industry as thousands of fishermen were drawn into the armed services and war-related industries. The government attempted to cope with the problem by deferring individuals engaged in the fishing industry but with limited success. In January 1943, North Carolina's Department of Conservation and Development recommended to the War Manpower Commission that selective regulations be amended to defer experienced commercial fishermen on the same basis as farmers were deferred. In August the Selective Service System placed certain classes of commercial fishermen (boat captains for example) on the list of critical occupations, but three months later the head of the U.S. Fisheries Bureau in Beaufort was complaining that commercial fishermen were still being drafted.[66]

In North Carolina the labor shortage resulted in the illegal employment of children. In 1943 shrimp packing houses in the Southport and Carteret County areas were charged with violating the child labor laws by employing children under sixteen years old. State and U.S. Bureau of Fisheries officials strongly supported the utilization of these children pointing out that it was part-time employment and primarily seasonal, and because of the manpower shortage essential to the fishing industry. "In this county there are approximately twenty concerns engaged in shrimp production and shipment and there are no laborers to prepare this product if they are to be deprived of the part-time employment of children," Dr. Prytherch wrote to the Office of the Coordinator of Fisheries, Department of the Interior.[67] Nevertheless, the labor problem remained acute until hostilities ended.

Despite the problems created by the war, it was during these years and the decade that followed that the shrimp industry emerged as the most important of all the state fisheries in terms of value. This development was the result of several factors: (a) the growing popularity of

63. Baker to Colonel McIntyre, assistant secretary to the president, 7 November 1936, Box 44, RG69.

64. *Southern Fisherman* III (January 1943), 14.

65. *Southern Fisherman* IV (January 1944), 119. The only account of the fishing industry in the United States during the war is a manuscript located in RG22 entitled, "A Report of the War Activities of the Office of the Coordinator of Fisheries in the Interest of Food Production."

66. Herbert Prytherch to Col. Thomas Upton, assistant director, State Division of Selective Service, 2 November 1943, copy in Rep. Graham Barden Papers, Perkins Library, Duke University, Durham, N.C. See also Department of Conservation and Development Memo, 21 January 1943, Box 31, Gov. Melville Broughton Papers; and Spencer B. King, Jr., *Selective Service in North Carolina* (Chapel Hill, 1949), p. 130. King discusses the draft and agricultural problems, but says very little about the fishing industry.

67. 16 July 1943, copy in Barden papers. See also *Southern Fisherman* III (May, July 1943), 43, 42; IV (April 1944), 67-68.

shrimp with the consumer; (b) marketing advances; (c) improved technology; (d) expansion of the shrimping waters; (e) and relaxation of restrictions on seasonal and night shrimping.

According to one article the remarkable increase in the consumption of shrimp was due to the influence of military personnel during the war.[68] However, nationwide, including North Carolina, the most important factor was that unlike meat, seafood, including shrimp, was not rationed. For the first time there was a significant demand for shrimp in the interior of the state. Frozen shrimp was even shipped to cities in the Piedmont such as Charlotte and Greensboro from the Gulf. In addition to the traditional markets in the Northeast, state fish dealers began shipping shrimp to Savannah, Georgia, to parts of Louisiana, and to other southern markets. In 1942 R. R. Barbour purchased the freezing plant formerly belonging to North Carolina Fisheries and by the following year was shipping shrimp "throughout the U.S.A. from Florida to Maine and the Middle West." Small shrimp were shipped to Louisiana for the canneries located there.[69]

Although canning would continue in the postwar years, the widespread adoption of quick-freezing shrimp was the most important marketing advance in years. North Carolina fisheries in the mid-thirties installed the first freezing plant in the coastal counties for seafood processing. However, it utilized "sharp" or slow freezing which was satisfactory for fish preserved in the round, but not for those dressed or filleted, nor for shrimp. "Quick-freezing" was primarily developed by Clarence Birdseye, whose process was introduced by General Foods in the 1930s. The name "Birds-Eye" became synonymous with quick-freezing of food products. The general acceptance of frozen food by consumers occurred during the war and immediately afterwards when food shortages made many turn to frozen foods who otherwise might not have tried them. From 568 million pounds in 1941, production rose to 1.028 million pounds in 1945 and 1.317 million in 1946.[70]

One writer has referred to the development of quick-freezing as the "greatest milestone in the history of shrimping."[71] Shrimp was no longer a perishable product subject to the fluctuations of the market. Instead it became a relatively stable commodity which the producer could control by freezing and holding for better prices when the market changed. This was the concept that North Carolina Fisheries envisioned in the 1930s, but it took the existence of war to make it a reality.

As early as 1942 a company in Southport announced plans to quick-freeze shrimp for retail in "oiled cardboard boxes." Unfortunately, the war prevented this innovation from being introduced, and it was not until 1946 that the first quick-freeze company was organized at Beaufort.[72] Two years later a small quick-freezing facility was erected in the coastal region. Although the introduction of quick-freezing played a role in the rapid expansion of the shrimp industry, the bulk of shrimp shipped to northeastern markets from North Carolina continued to be fresh.

The growing popularity of shrimp with the consumer was a major factor in a substantial increase in the value of shrimp, which in turn would lead to a rapid expansion of the industry in the state. After a poor season in 1941 in which the shrimp catch dropped to less than 2.5 million pounds, it stabilized at from 4 to 6 million pounds for 1942 through 1944. The average value was ten cents per pound. In 1945 over ten million pounds of shrimp were caught during the season, the second largest in North Carolina history. The dollar value reached nearly $850,000, an average value of eight cents per pound. During the following two years the average value increased to twenty cents per pound. The price per pound nearly tripled between 1940 and 1950. In 1944 the director of the state's Division of Commercial Fisheries noted: "It is not so much the increase in production of shrimp that surprises as it is the price that the shrimp brought the fisherman."[73] In 1943 the Office of Price Administration clamped a ceiling price on shrimp. Fishermen and dealers complained bitterly, pointing out that similar ceilings had not been placed on other seafoods, and that also their costs of fuel, gear, repairs, and labor had gone up rapidly. For example, "pickers" were paid five cents a bucket in 1940, seven cents in 1942, and up to fifteen cents in 1947.[74]

68. Jenkins, "The Shrimp Chasers," p. 5.

69. *Southern Fisherman* III (January 1943), 14; Southport *State Port Pilot*, 21 November 1945, 14 July 1948, 6 July 1949.

70. Anderson, *Refrigeration in America*, p. 277.

71. David R. Lord, "Florida's Fishermen," *Jacksonville Seafarer* (February 1971), p. 12.

72. Southport *State Port Pilot*, 7 January 1942; Carteret County *News Time*, 11 October 1955; Fulcher interview.

73. Carter Broad, *Review of the Shrimping Industry in North Carolina* (Morehead City, N.C., 1949), p. 1; *Biennial Report of the Department of Conservation and Development* (Raleigh, 1944), p. 31.

74. Southport *State Port Pilot*, 22, 29 September, 25 August 1943. "Pickers" now called headers were getting two dimes per bucket in 1950. Jenkins, "Shrimp Chasers," p. 5.

North Carolina's shrimp production reached its peak in 1953 with landings totaling more than 14 million pounds. By 1948 only menhaden outranked shrimp in value in North Carolina and within a few years shrimp would surpass menhaden. During these years the state's contribution to the South Atlantic region (excluding the Gulf) was rising steadily until the record-setting year of 1953. The 14.6 million pounds caught in 1953 was 36.48 percent of the South Atlantic regional catch. By 1952, shrimp had become the most valuable single fishery in the United States. In that year alone over 225 million pounds of shrimp were caught in the United States.[75]

The rapid increase in shrimp production placed a heavy burden on the state's fishing industry, particularly during the war years. As one dealer recalled, "The shrimp were here, but we did not have anything to catch them with."[76] By 1944 war production reached such high levels that cutbacks began. The government relaxed its control over certain strategic materials and products such as lumber, tool, and machinery parts, and made them available to civilians again on a priority basis. This combined with the decline of the submarine crisis off the coast resulted in efforts to rebuild and revive the fishing industry. Restrictions were eased or lifted for offshore fishing. They were also relaxed for the construction of new fishing vessels.

Boats were needed immediately. In May 1944 after a conference with the War Production Board's Coordinator of Fisheries for the South Atlantic states, the director of the Department of Conservation and Development was informed that "there are several hundred boats about worn out and new ones badly needed in the Carolina waters. Within the next six months there will be a general demand for new boats." The director was also told that the government's Smaller War Plants Corporation would provide low-interest loans for the construction of fishing vessels. The corporation estimated that the building of approximately eighty new fishing boats per month or one thousand per year would be approved.[77] Throughout 1944 and the early months of 1945 both the *Beaufort News* and the Southport *State Port Pilot* mentioned the building or purchasing of new vessels by local fishermen. The Southport paper stressed that many of the new boats were diesel powered.[78] Although diesel-powered fishing vessels became popular in the 1930s, at the outbreak of the war there was only one belonging to a North Carolina shrimper. A great many diesels were produced during the war and became available for fishing craft in 1944. From 1944 until the present the number of fishing vessels with diesels has continued to increase.

A majority of the new larger vessels were either war surplus or built outside of the state, primarily in Florida. One state shipbuilding company, the Pamlico Shipyard of Washington, North Carolina, received a contract from General Seafoods, Inc., to build shrimp trawlers. Between 1944 and 1946 the shipyard built forty-five 49-foot, three 62-foot, and one 72-foot vessels. Most of them were taken to Louisiana and sold.[79]

The trend towards larger vessels inaugurated in the war years has continued to the present. There are various reasons for this. Larger vessels were and are considered to be more efficient to operate. The former manager of the Belhaven Fish and Oyster Company said that "you would have starved to death . . . with the little rigs" that were used before the war. Another factor was the successful use of larger vessels farther south, particularly in the Gulf. Finally, there was the rapidly increasing demand for shrimp.

The new diesel-powered trawlers were frequently equipped with much more sophisticated gear than the standard vessels of the thirties. Much of the new technology was developed during the war. Surplus vessels were purchased by Brunswick County fishermen which were equipped with radar, ship-to-shore phones, fathometers, range finders, etc. The value of this equipment was recognized and new vessels were outfitted with many of these instruments. For the first time refrigeration was also installed on North Carolina trawlers, particularly those designed for ocean shrimping.[80]

75. Stansby, *Industrial Fishery Technology*, pp. 162-63; R. W. Howard, *This is the South* (New York, 1959), pp. 211-12.

76. Jones interview.

77. Ben Lawless to Flanagan, 24 June 1944, Box 4, Flanagan file, Records of the Smaller War Plants Corporation, National Archives Record Group 240, National Archives; James E. Coad to Bruce Etheridge, 19 May 1944, Box 33, Department of Conservation and Development Records, Division of Archives and History, Raleigh.

78. Southport *State Port Pilot*, 21 June, 5 July 1944; 25 April, 21 March, and 15 August 1945.

79. Ernest Saunders interview, 1977; newspaper clippings in possession of Ernest Saunders of Elizabeth City, N.C.; D. H. Daggett to W. T. Flanagan, 30 March 1945, Box 4, Flanagan file, RG240. For information about the construction of larger vessels in the state see the Wilmington *Star*, 25 February, 17 April 1947; Southport *State Port Pilot*, 19 February 1947.

80. Wilmington *Star*, 17 July 1947; Southport *State Port Pilot*, 21 March 1945; 10 December 1947; 9 March, 3 August 1949; *Atlantic Fisherman* XXXI (September 1950), 28.

There were improvements also in the net hoisting gear and the nets themselves. Although many of the vessels continued to be equipped with power winches and rope towlines, the new larger trawlers were becoming equipped with steel cables and drum hoists. The steel cables operated from the main engine. Try nets became more common, particularly in the Carteret County area. In 1948 the "New Jersey net" or balloon net was introduced in the Southport area and because of its efficiency rapidly replaced the old flat net. In 1946 Louis and Charles L. Gutherie developed a new shrimp net that was designed to allow small fish to escape. The development was widely publicized and led to the formation of a company to mass produce the net.[81]

The larger boats with their diesel engines and advanced equipment had a significant impact on the shrimping industry in the southeastern part of the state. The new vessels were capable of operating much farther offshore and were equipped to stay out longer than a day. In November 1945 the Southport *State Port Pilot* reported that although the number of trawlers working in the waters in Brunswick County was only sixty to sixty-five, "the production has already broken that of any remembered previous season, even during the years when there were around 200 boats."[82] Nearly 3 million pounds were landed in Southport in 1945.

Many fishermen believed that large shrimping areas existed offshore which were similar to those found off the Louisiana coast as a result of a government search. They began to discuss the possibility of a similar search off the North Carolina coast. In April 1945 W. B. Keziah, a well-known supporter of the fishing industry in Brunswick County wrote the director of the Department of Conservation and Development:

> During the past two years there has been a steadily growing tendency on the part of local fishermen to build or purchase large shrimp trawlers. Since November, to my personal knowledge, 18 large diesel powered boats . . . have been purchased by Brunswick fishermen. They are really seagoing craft and unless the state and federal governments can do something . . . we may expect these boats to wind their way to Louisiana.[83]

The legislature was asked to provide funds for a shrimp search and survey. The General Assembly created a five-man Shrimp Commission and appropriated fifty thousand dollars to finance a study of the industry, including a search for new shrimping areas off the coast. The survey was completed in 1949 and uncovered no new important offshore shrimping grounds.[84]

Although no new shrimping grounds were discovered off the coast, the industry continued to expand geographically. In 1949 Anderson, Lindner and King, in a review of the shrimp fishery in the southern states, wrote:

> North Carolina has two principal fishing areas. (One) is in the coastal waters of the mouth of Cape Fear River, with Southport as the base of operations. Principal fishing grounds extend about 10 miles to the west from Cape Fear Point; but scattered fishing is done down to about Little River Inlet. (The second) . . . which represents the northern limit of the fishery, is in the inside waters around the mouths of the Neuse and Newport Rivers, in Core and Pamlico Sounds, and in the coastal waters a short distance each side of Beaufort Inlet.

The most important expansion of the shrimping industry in North Carolina waters in the postwar years was the opening of the Pamlico Sound region. In 1934 the Board of Conservation and Development had severely curtailed trawling in the sound, but the regulations were later eased, and by 1937 limited shrimping was underway. "Inside" (estuarine) shrimping became important during the war with the dropoff of ocean fishing activities. Pamlico Sound became increasingly attractive to shrimpers. One authority has estimated that half of the shrimp produced in North Carolina between 1941 and 1949 came from Pamlico Sound and its tributaries.[85] During these years shrimping for the first time became the most important fishery to the fishermen of Hyde, Pamlico, and Beaufort counties. In 1945, 1,439,700 pounds were caught in Pamlico, 283,500 pounds in Hyde, 243,500 in Beaufort, and 244,300 in Dare. A *News & Observer* article in September 1948 said:

> In the waters of Pamlico Sound, the biggest fishing fleet that

81. Jones and Fulcher interviews; Southport *State Port Pilot*, 10 November 1946; H. F. Prytherch memo, 20 October 1947; file 822.21, RG22; *Atlantic Fisherman* XXX (April 1949), 2; Wilmington *Star*, 6 November 1947.

82. 28 November 1945; see also the *Pilot* for 4 April 1945.

83. 7 April 1945, Box 7, miscellaneous file, Department of Conservation and Development records, Division of Archives and History, Raleigh. See also the Southport *State Port Pilot*, 28 February 1947.

84. *Atlantic Fisherman*, XXIX (May 1948), 38-39; Broad, *Review of the Shrimping Industry in North Carolina*, p. 2; Wilmington *Post*, 18 March 1947. A good account of the survey including background information is in the Carteret County *News Time*, 11 October 1955.

85. 26 September 1948; *Southern Fisherman*, Annual Review, IX (1949), 168-69; Carteret County *News Time*, 11 October 1955; *The Goose Creek Islander 1874-1974* (1975), p. 207. For the beginning of shrimping in Hyde County see "Lake Landing Area History," in *Hyde County History* (Charlotte, N.C., 1976), p. 13.

ever assembled off the North Carolina coast is busy dragging the bottom to cash in on the shrimp bonanza, and it's getting hard to buy a trout or a mackerel or a bluefish in the fish houses. Many of the 500 fishing boats now working the sound would normally be after finfish. But at 32 cents a pound, the price the . . . boat operators pay the fishermen, the lure of the shrimp is hard to resist. Some of the boats come from as far away as Florida. . . . It has brought boom pays to many a fishing village on the shores of Pamlico Sound. Englehard, for instance, is taking in about $75,000 a day for a town more used to $750.[86]

In 1951 shrimping in Pamlico Sound received another boost when night shrimping was permitted for the first time.

The rapid acceleration of the shrimping industry in North Carolina was accompanied by state efforts to regulate it. Prior to 1946 some rules had been passed by the Board of Conservation and Development, which had the responsibility to manage the state's commercial fisheries, and rarely were they challenged. The shrimping boom changed this. From 1946 on the state attempted to impose more regulation on the industry. Not surprisingly the state's management policies generated considerable controversy. Changes in the state's shrimping policies resulted from demands within the industry and recommendations from outside. Confrontation was perhaps inevitable involving the shrimpers themselves, finfishermen, officials, and scientists.

In 1946 and again in 1947 fishermen requested that a closed season be declared on shrimping from March through 15 July. The Board of Conservation and Development, however, deferred action until a study of shrimp could be made. In May 1948 the board voted to abandon opening and closing dates until "more information can be obtained from investigation and research."[87]

The decision angered finfishermen who argued that shrimp trawling was destroying the bottoms and also small fish which were caught in the shrimp nets. They insisted then and continued to insist that shrimping should be curtailed and carefully regulated in order to protect the other fisheries. In 1950 the board reimposed a closed season from 1 January to 1 July for inland waters, but continued the open season for outside waters. This was considered a compromise, but did not end the dispute. The director of the state's fisheries commission admitted that there was no ready solution: "(It) has been recognized for a long time that the shrimp trawlers could not catch shrimp with a mesh large enough to turn the small fish out but realized that the shrimping industry was . . . as important as the finfish industry. . . ."[88]

The controversy gained a new dimension in 1951 when the board agreed to allow night shrimping from 1 June through 15 July. The following year night shrimping was permitted to start on 15 May. Up to that time night shrimping had not been allowed in North Carolina waters. The board's 1951 decision was based on a recommendation from the Institute of Fisheries Research at Morehead City which had discovered that "brown spotted shrimp" only ran at night in the sounds. In the Pamlico Sound area during the period that night shrimping was allowed, production rose over 200 percent during the first season.[89]

Opposition to night shrimping died slowly. Many fishermen bitterly opposed it for years, blaming the decision for declines in various species of fish in particular areas.

With the development of the Pamlico Sound shrimping grounds, the center of the industry shifted from Brunswick to Carteret County. From 1948 to the present Carteret County has led the state in shrimp production. In 1954 approximately 80 percent of all commercial shrimp was taken in the waters in or near Carteret County.

The expansion of the industry resulted in a significant increase in the number of vessels engaged in shrimping. In 1946, 289 boats were registered for shrimping; in 1947 approximately 500. The number would double in 1948 and would continue to climb.

On 18 February 1948, the Southport *State Port Pilot* reported: "Something entirely news in fishing is now going on off Southport as . . . trawlers are making it far

86. Broad, *Review of the Shrimping Industry in North Carolina*, p. 18.

87. *Atlantic Fisherman* XXIX (May 1948), 26. See also minutes of the Board of Conservation and Development, Board of Conservation and Development records, Division of Archives and History, Raleigh; Wilmington *Morning Star*, 26 July 1946.

88. Nelson memo, 1948, Box 4, Commercial Fisheries, Department of Conservation and Development records. See also Raleigh *News & Observer*, 17 February 1950; *Atlantic Fisherman* XXIX (May 1948), 26; XXXI (March 1950), 28; *Southern Fisherman* X (April 1950), 80. Minutes of the hearings of the Department of Conservation and Development's Fisheries Committee during the forties and fifties are full of statements from fishermen concerning the open vs. closed season controversy.

89. *Southern Fisherman* XII (December 1952), 88; (July 1952), 104; (December 1952), 47; *Atlantic Fisherman* XXXII (June 1951), 21. The 1952 meeting of the board also resulted in a relaxation of regulations against daytime shrimping in Pamlico South from 2 June until 1 July.

out in the Gulf stream in search of edible fish. . . . Several other . . . boats have turned their shrimp nets over to the taking of menhaden."[90] Although switching activities in the North Carolina commercial fishing industry was certainly not new in 1948, it did expand in different directions. More and more trawlers were rigged to shrimp in season or when abundant, and then would rerig for finfish when shrimp were not available. The adoption of more flexible rigs made this practicable.

Other fishermen, however, continued to migrate, seasonally, following the shrimp geographically. The adoption of large oceangoing trawlers in the late forties resulted in a noticeable increase in this pattern. North Carolina shrimpers joined shrimpers from the other South Atlantic states in following the shrimp. The growing migratory nature of the industry led to demands that nonstate fishermen be taxed, or in some way restricted in shrimping in that state's waters. South Carolina considered such action in 1946 and when North Carolina threatened to impose similar restrictions, the two states worked out a "reciprocal agreement" in 1947 in which a license to shrimp in one state was legally acceptable in the other. However, both states and others passed taxation measures against boats from states not part of any agreement. In 1950 the discovery of a new shrimping ground in the Florida Keys attracted dozens of North Carolina trawlers and led to criticisms by Florida fishermen against the North Carolinians. Florida considered restrictions. In 1951 disputes broke out among fishermen shrimping in the Gulf of Mexico between Gulf shrimpers and shrimpers from the Atlantic states. In 1951 the United States ruled in a South Carolina case that a tax on nonresident shrimpers was discriminatory. Although many North Carolina fishermen continued to insist on some kind of restriction for out-of-state shrimpers, the Board of Conservation and Development in 1954 passed a regulation whereby reciprocal privileges would be granted to shrimping states that granted similar privileges to North Carolina shrimpers.[91]

The boom in the shrimping industry did not bring about immediate prosperity to the fishermen. The price that they received for their product from the fish houses continued to fluctuate depending upon supply and demand. Fishermen continued to accuse the dealers of paying low prices. Dealers countered that their expenses were higher, particularly labor. With the end of the war, the Labor Department again clamped down on the employment of school-age children to head shrimp. Dissatisfaction with the prices that they were getting at the fish houses led to a strike in the Broad Creek and Swansboro area. It also resulted in shrimpers being attracted to organized labor. In 1947 nearly a hundred fishermen at Atlantic and Harkers Island joined the International Fishermen and Allied Workers of America, C.I.O. Union. The Southport *State Port Pilot* reported that more than a hundred boat owners, captains, and crew members, representing about 75 percent of all Southport fishermen joined the Union. In 1951 union organizers from the United Marine Division, International Longshoreman's Association, attempted to persuade shrimpers in the Southport and Pamlico Sound area to unionize.[92] These early efforts at unionization in the North Carolina fishing industry apparently were unsuccessful.

Shrimpers in the Holden Beach area organized their own cooperative packing house, but this new cooperative effort did not spread elsewhere in the state.[93] In 1950 dealers urged that a fisherman's association be formed, which would represent both dealers and fishermen. Those advocating the organization believed that it could both influence the stabilization of prices that fishermen received for their products, and also would "enable us to take demands to the legislature for laws which would assist all in our business." The North Carolina Fisheries Association was finally organized in November 1951 and by 1955 approximately two hundred had joined.[94] Although the association achieved some success, at least in influencing legislation, it did little to stabilize the industry.

The shrimping boom led to the organization in 1956 of the largest fishing vessel shipyard in the Southeast, the Morehead City Shipbuilding Corporation. It mass produced "Hatteras trawlers," ranging from 50 to 73

90. See also the *Atlantic Fisherman* XXIX (May 1948), 38-39.

91. *Biennial Report of the Department of Conservation and Development* (Raleigh, 1954), 29; Raleigh *News & Observer*, 19 January 1954; Carteret County *News Time*, 17 July 1951; 30 March 1954; Southport *State Port Pilot*, 16 April 1947; 20 November 1950; 15 March 1950; Hardee interview; Wilmington *Morning Star*, 3 July 1947; minutes of the Board of Conservation and Development, 22-23 July 1947; Department of Conservation and Development records, Division of Archives and History, Raleigh.

92. Carteret County *News Time*, 13 March 1947; 19 October 1951; *Atlantic Fisherman* XXIX (August 1948), 18; Wilmington *Post*, 15 March 1947; Southport *State Port Pilot*, 8 January 1947.

93. Southport *State Port Pilot*, 19 May 1948.

94. *Southern Fisherman* X (September 1950), 109; Carteret County *News Time*, 11 November 1955.

feet in length. In 1957 the yard was launching more than six a week. At its peak in 1958 the yard employed 250 workers, but in 1959 the corporation's parent company went bankrupt. The collapse occurred primarily because of a credit plan followed by the corporation which allowed fishermen to purchase trawlers for a very nominal sum and pay the balance off within a given period of time. Although credit purchasing is an American institution, the corporation had the misfortune to begin its construction program during a series of poor shrimp seasons. With little money coming in, the company's fragile financial structure collapsed.[95]

The state's fishing boat building industry apparently did not suffer the same fate as did the Morehead City Shipbuilding Corporation. In fact, the industry was moderately prosperous during the late fifties and early sixties. In the fifties the center of the trawler building business was Carteret County—six small yards operated in the county in 1956. However, early in the sixties the Holden Beach area in Brunswick County began to emerge as an important boat building center and has continued so until the present.[96]

Trends in the industry which began in the forties, continued throughout the fifties and sixties to the present. In 1955 more than two thousand North Carolina residents were employed in the shrimp industry in various capacities. Today more than eight thousand individuals (full- and part-time fishermen) are engaged in commercial shrimping. In 1955 some 1,200 vessels of all sizes and types were used in the industry. Today more than 16,000 craft are licensed to catch shrimp. However, the number of large vessels involved in shrimping has remained generally between 700 and 950. Between 1945 and 1950 the number of otter trawlers used in shrimping would more than double—from approximately 500 to more than 1,000. Since 1950 the number of trawlers has remained between approximately 800 and slightly over 1,000. Although pound nets, seines, and channel nets in limited numbers have continued to be used in the shrimp fishery, the commercial value of shrimp taken by these means is negligible in comparison to the value of shrimp taken by the otter trawl.

The trend towards larger vessels has continued; some trawlers built in recent years have been over 90 feet in length. Improvement in gear has also continued. Nylon nets have gradually replaced cotton. Automatic pilots and loran systems have become common on the larger vessels in recent years. However, the most important technological change since the mid-fifties was the adoption of double rigs. The double rig was developed in Texas in 1955 and its use rapidly spread to the South Atlantic states. The Morehead City Shipbuilding Corporation vessels may have been the first North Carolina built trawlers to be outfitted with double rigs. They launched a 63-foot vessel with a double rig in 1957.[97] Shrimp trawlers are still primarily built of wood although an occasional fiberglass or steel vessel joins the fleet.

Marketing patterns also changed after the mid-fifties. Until then, North Carolina dealers sent the bulk of their shrimp—all fresh—to northeastern markets. Some fresh shrimp was distributed to the interior of North Carolina and a limited amount of frozen shrimp was sent to other states in the North and Midwest. North Carolina had an advantage in the northeastern shrimp and fish market because of its proximity. Within twenty-four hours of being caught fresh shrimp could be at the market. The advantage became less important as frozen shrimp became more popular. In 1955 William A. Ellison, Jr., a fishing expert in the state warned, "North Carolina's producers and dealers are square up against the fact that they may have to freeze at home or suffer a severe setback in the years to come." He added that "only one important market is open today for any large quantity of fresh shrimp."[98] In 1956 a quick-freeze plant was built at Atlantic and in 1957 started shipping packages of frozen shrimp. Other dealers followed. By

95. The literature on the Morehead City Shipbuilding Corporation is extensive. The corporation carried out an impressive advertisement campaign. *Southern Fisherman*, *Atlantic Fisherman*, and its successor, *National Fisherman*, and other trade magazines frequently carried articles and announcements about the yard and Hatteras trawlers. State newspapers also gave it much publicity. The failure of the shipyard made the news frequently in 1959 and 1960. See particularly the Raleigh *News & Observer* and the Carteret County *News Time*. See also *The State Magazine* XXIV (July 1956), 22; and (June 1956), 18-19. *The Carteret County Overall Economic Development Program* (Morehead City, 1966), p. 21, referred to the industry as the largest in the county until its closing.

96. The Brunswick *Beacon*, 26 July 1973; Durham *Morning Herald*, 9 May 1976; Southport *State Port Pilot*, 30 July 1975; Raleigh *News & Observer*, 12 November 1975. See also the Durham *Morning Herald*, 8 April 1956.

97. *National Fisherman* XXXVIII (December 1957), 19; XXXIX (January 1958), 12-13; (February 1958), 2; (April 1958), 30; (August 1958), 13; XXXX (June 1959), 13; Captiva, "Trends in Shrimp Trawler Design," pp. 141-44; Stansby, *Industrial Fishery Technology*, p. 167; Jones interview; *Southern Fisherman* XVI (1956 yearbook), 29.

98. Carteret County *News Time*, 11 October 1955. See also William A. Ellison, Jr., "Report on the Manufacturing Potential of the North Carolina Fishing Industry," copy in Box 71, Gov. Luther Hodges Papers, Division of Archives and History, Raleigh.

the early sixties, all the shrimp shipped to markets outside the state were frozen.

Despite the continued lucrative market and the growing number of individuals engaged in shrimping, the fishery has apparently reached its peak insofar as landings are concerned. From a high in 1953 of 14.645 million pounds, the catch has fluctuated from year to year, only once in 1955, reaching 10 million pounds.[99]

99. Chestnut and Davis, *Synopsis of Marine Fisheries*, p. 132; information provided by the state Division of Commercial Fisheries.

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Book Review Article: The Second Destruction of the *Geldermalsen*

GEORGE L. MILLER

THIS review of C. J. A. Jörg's book on the Chinese porcelain from the Dutch East India Company ship *Geldermalsen*, which sank in 1752, addresses some broader questions involved in the destruction of shipwreck sites for commercial profit. These questions grew out of the issue of what relationship scholars should have with those who destroy sites and acquire objects from them. The first part of the article is a review of Jörg's book followed by a commentary on the problems that collecting from looted sites raise.

CHRISTIAAN J. A. JÖRG. *The Geldermalsen History and Porcelain* (Groningen, Netherlands: Kemper Publishers, 1986). 8½" x 11¼", cloth, 124 pages, 106 illustrations of which 86 are in full color, bibliography, notes, 5 appendices. £25.00.

Christiaan Jörg's book on the history of and porcelains from the 1752 Dutch East India Company wreck *Geldermalsen* is amazing because it was put together in less than three months. Despite the limited amount of time, Jörg produced a credible study of this collection with excellent documentation of the wreck. In the spring of 1985, this wreck was mined for its valuables by an English salvager, Capt. Michael Hatcher, who then shipped them to Christie's Amsterdam.[1] Christie's cleaned and catalogued the collection for their auction in April 1986, just one year after it was plucked from the wreck. Their catalogue for the sale was published in December 1985.[2]

In his introduction, Jörg states that he was brought in to examine the porcelain by Christie's in December 1985 indicating that his research was an afterthought. Indeed, Christie's auction catalogue had no information on the identity of the wreck. In other words, Jörg had from December until the auction in April to study the collection. His introduction is dated February 1986, suggesting that he wanted to have it published in time for the auction.

Despite the short time that he had to work with this collection of over 150,000 Chinese porcelain vessels, Jörg accomplished two important objectives. One, he clearly documented the wreck as being the *Geldermalsen*. Two, he produced a minimal record of the porcelain assemblage before it was dispersed around the world by Christie's and thus lost to future scholars as a collection.

Christiaan Jörg's accomplishment of the seemingly impossible was aided by his expertise in the Dutch trade with China, and the fortuitous existence and previously organized relevant documents. He is a recognized authority on the Dutch East India Company porcelain trade and is the author of a thesis titled *Porcelain and the Dutch China Trade*. In addition to his knowledge of the subject, he was given access to historian Peter Diebels's research notes on the *Geldermalsen*.[3] Jörg uses this information to provide a lucid overview of the mechanics of the Dutch East India Company's involvement in the China trade.

From this background, Jörg focuses on the history of the *Geldermalsen* including purchase orders for 1751, and its wreck caused by navigational error. The ship's papers, including purchase orders, and thirty-two crew members survived the sinking. When those survivors

1. Dyson, J., "Captain Hatcher's Richest Find," *Reader's Digest*, October 1986, pp. 111-15.

2. Christie's Amsterdam, *The Nanking Cargo: Chinese Export Porcelain and Gold, European Glass and Stoneware recovered by Captain Michael Hatcher from a European merchant ship wrecked in the South China Seas*. Auction held at the Hilton Hotel, Amsterdam, Monday, 28 April until Friday, 2 May 1986. Drukkerij Onkenhout b.v. Hilversum 12/85.

3. Jörg, ibid., pp. 6-7.

reached Batavia, the company held an extensive inquiry to determine why the gold had not been saved. There was strong suspicion that the survivors had hidden the gold after the wreck. Jörg used these records very effectively to describe the wreck and explain the workings of the Dutch East India Company.

The rest of the book concentrates on those artifacts that Hatcher chose to pull from the wreck. In Jörg's words, "We can distinguish three categories: objects belong to the ship's inventory, gold, and the collection of porcelain" (p. 51). Jörg makes comments throughout the book that mildly rebuke Hatcher for the destruction and skewing of information. Consider, for example, this passage from page 7:

> Besides, the underwater archives which are only just beginning to be discovered by man, are very fragile and unique, and should be handled with utmost care. Future generations should also be able to profit from the information which is becoming available at present, and which can never be replaced.
>
> In this case most of the shards have remained at the bottom of the sea, while they might have told us even more about the variety of the assortment. The finds have not been registered systematically either, so that we cannot be sure whether, for instance, such a copper candlestick was part of the inventory of the cabin. Even the smallest detail can be of value in a historical study.

Jörg's absence of anger does not make his criticism any less damning. Open criticism of Hatcher may not have been possible under the conditions of his access to the ceramics. However, he left enough of a trail to show that he deplores the destruction that Hatcher wrought and that his first concern was to record the collection before the diaspora.

Using the original packing lists and purchase orders for 1750 and 1751, Jörg reconstructed the selection process for what became the *Geldermalsen*'s cargo. By comparing the cargo list with the numbers of vessels Hatcher recovered, he is able to show the proportion recovered of the different types of vessels. In some cases a very high percentage was recovered. In others, a lower percentage was retrieved, such as cups and saucers—32,500 were not recovered, which was about half of what was listed in the inventory. Along with information from the ship's inventory, there are excellent photographs, most in color, of the porcelain.

In summation, Jörg has provided a good documentation of the wreck of the *Geldermalsen* under conditions of extreme time constraints. Without his efforts, an extremely important wreck would have gone undocumented and the information completely lost to future scholars. This book will be an important one for anyone dealing with eighteenth-century Chinese export porcelain.

Some archaeologists and nautical scholars will not have anything to do with looted materials and with those who destroy archaeological resources. An argument in favor of that position is that documentation and identification adds to the monetary value of the objects and thus encourages further looting. In this instance, however, the information on the *Geldermalsen* cargo would have been irretrievably lost had Jörg not recorded what he did in the short time available to him. Fortunately Jörg's research did not become part of the Christie's auction catalogue, and it is difficult to assess to what extent his book may have contributed to the extremely high prices the porcelain brought.

Given the quality of documentation related to the wreck and the excellent photographs in the book, Jörg has done a service in preserving some information from the *Geldermalsen* before its cargo was scattered to the winds. While I disapprove of working with those who destroy sites and providing documentation for their artifacts which will increase their monetary value, I can appreciate Jörg's implicit position in rescuing the information. This issue leads us to broader questions about wrecks and those who destroy such resources either by stripping artifacts from them or making it profitable by marketing or purchasing objects from such operations.

First, let us look at Capt. Michael Hatcher and his history of destruction of underwater sites. Hatcher makes no claim to being an archaeologist. He is an English sea captain living in Singapore, who has salvaged cargoes, such as tin and scrap metal, from World War II wrecks.[4] *Geldermalsen* is the second historical wreck that he has scavenged. The first was a Chinese junk, which sank around 1640, from which he extracted twenty-three thousand pieces of Chinese porcelain. According to Jörg, he donated over fifty vessels from that wreck to the Groningen Museum in the Netherlands and the rest was sold by Christie's of Amsterdam where the prices exceeded everyone's expectations and brought in over $2 million.

Clearly, Captain Hatcher had stumbled onto a good thing. He is like one of the bears at Yellowstone National

4. Dyson, ibid., p. 111.

Park. Once they find the easy living that the dumpsters can provide, they give up scavenging or in this case salvage work. *Geldermalsen* is the bear's second wreck. In a *Reader's Digest* article, John Dyson states that after sale of the porcelain from the 1640 wreck,

> Hatcher now decided that he would search only for historic shipwrecks. He invested his riches in a long-range working yacht, the *Restless M*, in which he could live on the job. He collected old maps and sent students hunting for details on wrecks through the archives of the Dutch East India Company. . . .[5]

Hatcher claims to have been looking for the *Geldermalsen* and that he resailed its last voyage before returning to the reef where the Chinese junk had been found, to look for other wrecks.[6] It is not clear, however, whether or not Hatcher knew the wreck he found was the *Geldermalsen*. There would be good reasons not to know the name of the wreck, which will be discussed later.

Preservation on the wreck was excellent. A video film distributed by Christie's clearly shows divers reaching into crates of porcelain and removing the vessels. Some crates are also visible in some of the illustrations in Jörg's book. Some of the most damning comments on Hatcher's "excavation" techniques, or lack of them, come from his own descriptions. When speaking of the speed of his retrieval operations, he indicated that "it was a race to get what they could before being interrupted by weather, rivals, pirates or some government."[7] In Dyson's *Reader's Digest* article the scene is described:

> Using a big nozzle, chief diver Mohamed "Hash" Hashim sucked away thick debris and opened the lid of a crumbled crate. There sat row upon row of tiny blue-on-white teacups, shiny-bright.[8]

As Jörg pointed out, "It is a pity that Hatcher has paid little attention to a detailed registration of his finds. . . ." The least competent of archaeologists would have recorded which porcelain vessels came from which crates. No attempt was made to save the crates let alone keep track of their contents. This is in sharp contrast to excavation of a fourteenth-century Chinese junk by the South Korean government in 1976 which also contained an intact cargo of Chinese porcelain. Crates from that site have been stabilized and preserved. They are illustrated in an article in *National Geographic*.[9]

Some archaeologists might argue that *Geldermalsen* would never have been excavated by professional archaeologists because of the logistics involved. However, any wreck that produces $16 million at an auction could have been funded for legitimate excavation. The Korean government excavation clearly shows that underwater archaeology can be done in that part of the world.

The last comment on Hatcher is that he recorded almost nothing about the ship and provided almost no conservation for the artifacts. After removal from the wreck, the "goodies" were packed into fourteen hundred large cartons and carried by a container ship to Amsterdam where it took six people a month to unpack and "clean" the 150,000 Chinese porcelain vessels.[10]

Hatcher's strip-mining operation had nothing to do with archaeology other than it destroyed a significant site. He clearly understood the importance of this wreck. David S. Howard, an English expert on Chinese porcelain, gave a lecture on the *Geldermalsen* porcelain at the Colonial Williamsburg Antiques Forum in February 1987. There he explained Captain Hatcher's reasons why this wreck was so important and so well preserved. They were:

1. The wreck resulted from striking a reef, after which the ship drifted about five miles and sank. Thus it was not broken up on the reef.
2. This occurred in calm weather, thus the ship remained intact.
3. There was a soft bottom into which the wreck settled.
4. The tons of tea above the ceramics settled in around them and provided a protective cocoon for the porcelain thus keeping them in superb condition.
5. This remarkably well preserved wreck is accompanied by excellent records from the thirty-two survivors as well as the ship's papers which have survived in the Dutch Archives.

According to Howard, Hatcher doubts that he would ever in a thousand years of searching be able to find a wreck meeting all these conditions.

Hatcher's exploitation of shipwrecks for personal gain could not have done that without assistance. The second player, and perhaps the major force in the

5. Dyson, ibid., p. 113.
6. Dyson, ibid., p. 113.
7. Dyson, ibid., p. 114.
8. Dyson, ibid., p. 114.
9. Kim, E. H. and D. H. Keith, "The Yellow Sea Yields a Shipwreck Trove," *National Geographic*, vol. 156, no. 2, pp. 236-37.
10. Dyson, ibid., p. 115.

destruction of the *Geldermalsen* was Christie's of Amsterdam. Hatcher is only responding to opportunities that Christie's and other auction houses provide. The third player is those who purchase the objects ripped from archaeological contexts. Without accomplices, he could not exist. *Auction News from Christie's* for April 1987 had an article titled "Shipwreck Sales at Christie's Amsterdam" which opens with the following sentence:

> Over the years, Christie's Amsterdam has established itself as the most significant venue in the world for the disposal at public auction of artifacts and cargo recovered from sunken vessels.

Then the article goes on to describe the sale of objects from four different seventeenth- and eighteenth-century wrecks auctioned by Christie's Amsterdam.[11] Such auction houses are the link between scavengers and the market. Attention needs to be focused on their role in the destruction of the world's archaeological resources.

Prior to the auctioning of the *Geldermalsen* porcelains, there was speculation about the impact that 150,000 pieces of mid-eighteenth-century porcelain would have on the market. Some felt that the very quantity of the vessels would depress prices. The following comments from the antique dealers Ralph M. Chait and David S. Howard appeared in the *New York Times* in March 1986:

> "The real charm of these objects lies in their provenance," Mr. Howard said. "The porcelain is not at all rare, rather it was standard everyday dinnerware made for the comfortable middle-class families of Europe." Mr. Chait calls the porcelain "hotel crockery." "Once you separate the wonderful romance of the discovery from the actual objects," he said, "you'll see that the pieces are nothing but a decorator's delight. It is the sheer volume that is overwhelming."[12]

Christie's promoted their auction under the name "The Nanking Cargo" and actively sought out an expanded elite clientele including embassies, department stores, restaurants, and interior decorators. Truly they had found the consumable past. A great archaeological assemblage was broken up before a detailed study could be made of it, to supply interior decorators with objects for yuppies' condos. Bloomingdale's, recognized as the arbiter of trendiness, purchased over three thousand pieces of the "Nanking Cargo" and advertised that "it's a rare opportunity to bring museum quality artifacts into your home. Look for the Nanking Cargo Shop, starting today on the 2nd floor."[13]

Christie's succeeded in enlarging the market beyond traditional collectors and museums. The "Nanking Cargo" had been expected to bring in $4.5 million.[14] By dint of promotion alone they unloaded the largest assemblage to become available since the days of the Dutch East India Company for a cool $16 million. Many pieces brought from ten to fifteen times the estimated value in the Christie's catalogue.[15]

The high auction prices are perhaps the worst news that has come out of this whole sad affair. These inflated prices amount to a large bounty on any shipwrecks containing Chinese porcelain which will lead to a wholesale destruction of such wrecks. While Hatcher was the scavenger of the *Geldermalsen*, Christie's was the *agent provocateur* that made the scavenging possible and profitable. Their sale of the twenty-three thousand vessels from the 1640s Chinese junk helped Hatcher decide "that he would only search for historic wrecks." With his cut from that sale, Hatcher was able to purchase a long-range working yacht and equip it with a $250,000 proton magnetometer for finding wrecks of which *Geldermalsen* was the first.[16] Those who are concerned about the protection of shipwrecks would do well to direct attention, blame, and the harsh glare of publicity on auction houses such as Christie's of Amsterdam whose aggressive search for new sources of salable antiquities results in the destruction of archaeological sites.

Christie's and Hatcher's interest in the *Geldermalsen* was limited to what could be sold for a profit. Their auction catalogue is filled with color plates of the gold, porcelain, and those few other artifacts that Hatcher bothered to bring up. One of the most ironic lines in their catalogue is about Captain Hatcher which reads, "The Nanking Cargo is the result of exhaustive professionalism, which is the hallmark of Captain Hatcher and his team."[17] As they did not name the profession

11. "Shipwreck Sales at Christie's Amsterdam," *Auction News from Christie's*, vol. 7, no. 7, April 1986, pp. 1 and 4.

12. Vogel, C., "Auctions," "Old porcelain up from sea," *New York Times*, 21 March 1986, sect. F.

13. Bloomingdale's advertisement, the *Boston Globe*, 21 November 1986, p. 11.

14. Vogel, ibid.

15. Austin, J. "Our New Dinner Service is 235 Years Old and Has Never Been Used," *Colonial Williamsburg News*, vol. 39, no. 8, p. 3.

16. Dyson, ibid., p. 113.

17. Christie's Amsterdam, *The Nanking Cargo Chinese Export Porcelain and Gold, European Glass and Stoneware recovered by Captain*

involved, perhaps they are right, however they certainly were not talking about archaeology.

There are some aspects of Christie's involvement in this sale that raise interesting questions. Nowhere in their discussion of the wreck do they let on that they know its name or that it was a Dutch East India Company wreck. Given Hatcher's account in the *Reader's Digest*, it is difficult to believe that Christie's would not at least consider *Geldermalsen* as a probable candidate. None of the artifacts listed in the auction catalogue provide direct evidence that the ship belonged to the Dutch East India Company. However, a supplement to the catalogue adds two bronze cannons with Dutch East India Company markings to the auction. This supplement also has an illustration of the ship's bell which is dated 1747. Given this evidence, it would be reasonable to surmise that Christie's at least knew that the ship was a Dutch East India Company wreck.

Considering Christie's self-touted expertise in wrecks, it would not be unreasonable to surmise that they knew more but chose not to reveal their knowledge out of legal concerns. There may have been good reasons to be ignorant of the ship's identity. In 1798 the Dutch East India Company went bankrupt and all of its assets and liabilities were assumed by the Batavian Republic which became the Kingdom of the Netherlands in 1813. This government maintains a claim on all Dutch East India wrecks. For example, Dutch government claims to the *Amsterdam*, a Dutch East India wreck from 1748 on the coast of England, were recognized when that wreck was excavated by Peter Marsden in 1969.[18]

Nowhere in the Christie's catalogue is there a mention of the name of the wreck or any claims that others may have to it. It is difficult to believe that Christiaan Jörg's research into the identification of the wreck was not known by Christie's by the time of the auction. Even their publication *Auction News from Christie's* for April of 1986 does not identify the wreck by name or mention its relationship with the Dutch East India Company. Given that Jörg's research was completed in February, it is inconceivable that they did not know that the cargo was from the *Geldermalsen*.

Beyond the claims of the Dutch government to the wreck is the issue of the wreck's location. Again there is no information in the Christie's catalogue as to where *Geldermalsen* was found. Was it in international waters or not? If it was not, who else may have a claim on the wreck? Hatcher apparently was aware of this possibility. His comment in the *Reader's Digest* that "it was a race to get what they could before being interrupted by weather, rivals, pirates or some government" clearly suggests that he was aware of probable claims from Indonesia.[19]

There is currently a lawsuit by the Indonesian government concerning excavation of the *Geldermalsen*. If it turns out that the wreck was in Indonesian waters, then the wreck was illegally excavated and title of ownership of the artifacts will be clouded by claims of the Indonesian and Dutch governments. Customers normally expect a respected old auction house like Christie's to be very careful to make sure that they pass on a clear title to objects sold in their auction house.

In 1970 the United Nations adopted the UNESCO Convention on the means of prohibiting and preventing the illicit import, export, and transfer of ownership of cultural property. Many countries around the world have adopted this convention. Destruction of the *Geldermalsen* site and the complete disregard of archaeological and preservation principles are to be deplored on ethical and moral grounds. Besides, it may have been illegal by the terms of the UNESCO Convention on Cultural Property. If it turns out that laws were broken, then the artifacts could be subject to recovery and repatriation to Indonesia.

The third party to this destruction of the *Geldermalsen* is of course those museums, collectors, and others who purchased the artifacts. As was pointed out above, the size of this collection could have depressed the market for Chinese porcelain. Christie's knew this, so they hyped the sale to a wider universe of purchasers far beyond the circle of traditional porcelain collectors. Yuppies, interior decorators, and, indeed, most collectors do not have a great deal of consciousness concerning preservation principles. When they see an old well-regarded firm like Christie's selling Chinese porcelain from a 230-year-old wreck and are presented the story of Captain Hatcher's finds, they don't think twice about possible ethical or legal problems.

Almost nothing has been done to educate the public

Michael Hatcher from a European merchant ship wrecked in the South China Seas, p. 9, published December 1985.

18. Marsden, P., *The Wreck of the Amsterdam* (New York: Stein and Day Publishers, 1975), pp. 233-34.

19. Dyson, ibid., p. 114.

to the fact that the sale of archaeological artifacts contributes directly to the destruction of sites. Laws and regulations related to the excavation of sites, particularly of shipwrecks, is presented in the news media as the government trying to come in for a free piece of the pie. Looters are pictured as David versus Goliath with the government as the bad giant. One of the problems in educating the public is that the agencies which should be performing this task are some of the museums that most eagerly participated in the auctions and they show almost no concern for the sites being destroyed.

It is not uncommon for museum curators trained in an art history tradition to have little or no appreciation for preservation ethics. They commonly deal with the intrinsic values of individual objects rather than with extrinsic relationships that can be extracted from an assemblage of artifacts. These curators need to wise up to the consequence of their purchasing artifacts from destroyed sites.

Fortunately, great strides are being made in terms of establishing codes of ethics for museum behavior in acquisition of objects, in recognition of the relationship between site destruction and the marketplace, and in recognition of the cultural property of other countries. This is directly an outgrowth of the UNESCO Convention.

In November of 1986 the International Council of Museums adopted its *Code of Professional Ethics*. Item 3.2 of that code, titled "Acquisition of Illicit Material," reviews the problems involved in importing objects with dubious titles. It stresses the importance of having clear title to ownership as well as avoiding objects that have been illegally imported. The discussion concludes with a paragraph related to the ethics of acquiring excavated material:

> So far as excavated material is concerned, in addition to the safeguards set out above, the museum should not acquire by purchase objects in any case where the governing body or responsible officer has reasonable cause to believe that their recovery involved the recent damage of ancient monuments or archaeological sites, or involved a failure to disclose the finds to the owner or occupier of the land, or to the proper legal or governmental authorities.

This statement deals with the spirit of compliance and calls unequivocally for attention to the circumstances under which the objects were recovered. If there is any doubt about the role that museums should play in this area, section 3.3 states flatly in "Field Study and Collecting" that:

> Museums should assume a position of leadership in the effort to halt the continuing degradation of the world's natural history, archaeological, ethnographic and artistic resources. Each museum should develop policies that allow it to conduct its activities within appropriate national and international laws and treaty obligations, and with a reasonable certainty that its approach is consistent with the spirit and intent of both national and international efforts to protect and enhance the cultural heritage.[20]

Archaeologists of course have been keenly aware of the problem for a long time because of the nature of their work and familiarity with the areas being plundered. Calvin Cummings presented a paper titled "A Matter of Ethics . . ." at the Council for Underwater Archaeology meetings in 1983 which extracted positions taken by eight of the main archaeological societies in America. They all took positions against the selling of artifacts from sites for profit or to enhance personal collections.[21]

In addition to these general positions and ethical canons set out by various archaeological societies, there was a resolution relating specifically to destruction of the *Geldermalsen* that was published by the International Congress of Maritime Museums in October of 1986. It reads:

> Recently the firm of Christie's held a highly publicized auction of the cargo of the wreck of the Dutch East Indiaman GELDERMALSEN, whose cargo of Chinese export porcelain was the largest ever found. Since a number of museums purchased items from this collection, despite its poorly conducted excavation, it is felt worthwhile to bring to ICCM members attention the following resolution:
>
> "Members of the underwater archaeology group attending the PACT symposium at Louvain-la-Neuve, 17-19 April 1986, unanimously deplore the way the GELDERMALSEN was excavated."

Such an archaeologically very important find as the GELDERMALSEN should have been excavated in a scientific way. Correlation of the rather well documented information from the available archives and the excavation information is of utmost importance. This means registration of find places

20. International Council of Museums Subcommittee on Museum Ethics, 1984-1985. *ICOM Code of Professional Ethics in Accordance with Article 5 of the Statutes of ICOM*. Revised draft, December 1985, adopted 4 November 1986.

21. Cummings, C. R., "A Matter of Ethics . . . ," paper presented at the Council for Underwater Archaeology meetings in Philadelphia in 1983.

within the wreck, details on the ship structure, environmental information, etc. Without such scientific standards, no excavation should take place in order not to lose the information which is very important for a historical point of view.

In fact, the cargo of the GELDERMALSEN has been looted without concern for context and its commercial sale will entirely destroy the wreck.

Thus, both the ship and cargo will be entirely lost to science. It is necessary to have international legislative regulations to prevent disasters like the looting of the GELDERMALSEN. —Louvain-la-Neuve, 19th April 1986.[22]

Considering all the support given to the guidelines from the UNESCO Convention on Cultural Property, it is difficult to understand how museum curators can justify their purchase of the porcelains from *Geldermalsen*. Some museums, such as the Rijks Museum of the Netherlands, boycotted the sale. Unfortunately, their ethical and moral position was ignored by other institutions.

When curators from otherwise respectable institutions purchase objects from such auctions, they help others to justify their own participation in such sales. They shirk their moral responsibility to, as the International Council of Museums states, "assume a position of leadership in the effort to halt the continuing degradation of the world's . . . archaeological ethnographic and historical . . ." resources.[23]

Awhile back on National Public Radio, there was a news item about some free-wheeling entrepreneurs who had purchased a number of Picasso paintings. They cut the paintings into two-inch squares and offered them for sale. Their objective they piously claimed was to enable more people to own a Picasso. Clearly they were destroying art to pander to the status-seeking ambitions of people with little understanding of the subject. We are making it profitable to destroy sites when we purchase artifacts such as the *Geldermalsen* porcelains. There is not much difference between the looter himself and his accomplices in auction houses, museums, and department stores.

22. International Congress of Maritime Museums, *ICCM News*. October 1986.

23. International Council of Museums, ibid., 3.3.

Acknowledgments

This review and commentary came about because of the purchase of some Chinese porcelain from the *Geldermalsen* by the Department of Collections of Colonial Williamsburg. I felt it was necessary to speak out concerning the destruction of an important archaeological site and to make an attempt at educating people concerning the ethical and legal questions related to such acquisitions.

My area of research is ceramics and I do not have a background in maritime history or underwater archaeology. This article would have been difficult to write without the invaluable assistance and information provided by colleagues in underwater archaeology. Paul Johnston of the Peabody Museum in Salem, Massachusetts, provided assistance and pointed out several sources to me. I would also like to thank George Bass of the Institute of Nautical Archaeology and Dick Sweet of the Snow Squall project for information on and suggestions related to underwater archaeology.

James Wiseman of Boston University and Clemency Coggins of Harvard University both provided information on looting, legislation, and the ethics related to museum acquisition of archaeological artifacts. Ellen Herscher of the American Association of Museums provided information on museum standards related to the questions of collecting excavated materials.

Here at Colonial Williamsburg, I would like to thank Marley Brown for whom I work and Cary Carson, director of research, for their support and for allowing me the time to research and write this paper. Several colleagues read drafts and gave me helpful comments for which I am very grateful. They are Cary Carson, Marley Brown, Nancy Dickinson, Ann Smart, Rob Hunter, and Kathleen Pepper. I would like to thank Gordon Fine and Catherine Hutchins for reading over drafts of this paper and providing helpful comments. I would like to thank Julia Curtis of Williamsburg for information on Hatcher's earlier excavations.

Book Reviews

ROBERT C. RITCHIE, *Captain Kidd and the War against the Pirates* (Cambridge, Massachusetts: Harvard University Press, 1986). 6½" x 9½", cloth, vii + 306 pages, 23 black-and-white illustrations (including maps), bibliography, notes and index. $20.00.

Piracy, buccaneering—or "robbery at sea"—originated in the early days of seafaring, but literally swept the world from the mid-sixteenth to the early years of the eighteenth century. William Kidd, Stede Bonnet and Edward Teach (Blackbeard) are just a few of the buccaneers best-remembered today in popular culture.

However, Robert C. Ritchie claims in the preface of this new book that "the colorful and romantic aspects of pirate life have obscured the historical and political reasons for the rise of buccaneering." The author then reveals the origins of large-scale piracy by examining the life and exploits of William Kidd, one of the best-known pirates of a by-gone era. Ritchie traces the evolution of buccaneering from its origins to its decline, and in the process illuminates the lives, lifestyles and motivations of other well-known pirates.

But the author discusses more than pirates. He explains how Great Britain, France and the Netherlands originally supported piracy during the mid-sixteenth century when fighting Spain and Portugal for commerce and power. Next, he explains how more individuals entered buccaneering and eventually carried the activity into remote areas of the world. Ritchie also describes the violence that increasingly typified acts of piracy during the late seventeenth and early eighteenth centuries, and explains how it eventually alienated the pirates' once-sympathetic merchants and shipowners. Finally, he focuses on the Royal Navy's successful war against the pirates.

The author opens the book's narrative by vividly describing a scene on the River Thames in 1701, the year that Kidd is hanged: "Gaunt crosstrees dangling rotted bodies studded the banks of the [river]. Each blackened corpse attested to one more pirate who had fallen into the clutches of the high Court of Admiralty." After providing the grisly description, Ritchie literally steps back to provide a historical overview of piracy.

Then, the author focuses on William Kidd. He traces the buccaneer's life from his birth in Greenock, Scotland in 1645 to his alliance in 1695 with some of England's most powerful men. The scheme enabled Kidd to lead the crew of the privateer *Adventure Galley* on an expedition, under the premise that he would pursue pirates who had left the American colonies for the Red Sea and other areas. The author discusses Kidd's many exploits, including the pirate's best-known voyage aboard the *Adventure* from Bellmont to Madagascar between 1696 and 1697. He also describes pirate bases such as the one on the remote island of Saint Maries, ten miles from the northeastern coast of Madagascar, where Kidd arrived in 1698.

Ritchie follows Kidd and his crew to New York aboard their Indian-designed prize, the *Quedah Merchant*. Kidd's capture of the *Quedah,* which had been leased to a leading member of the Indian emperor's own court (Muklis Khan and others), allied powerful forces against Kidd. His capture of the *Quedah* infuriated the people of Surat, India, upset the East India Company, and halted the company's already declining trade and that of the French and Dutch. As the author explains, Kidd's blow to the English company's commerce and to England's powerful rivals led to the pirate's demise. Kidd was eventually seized and imprisoned at Boston; later, he was transferred to England and imprisoned at Newgate where he was tried and executed in 1701. The company had sought Kidd's execution to restore trade in the Indian Ocean while England had also attempted to restore order and regularity throughout its empire to enhance profits.

The author concludes his tome by discussing the multiple hangings that occurred frequently as pirates were virtually exterminated during the first quarter of the 1700s. He explores some of the myths, accounts, ballads, novels and legends about buccaneering that were written as early as the eighteenth century—all of which still form an important part of our maritime folklore. The author states that widespread piracy was eventually crushed from the face of the earth by the rising imperial states, and claims that pirates have "passed into legend and won at least a posthumous triumph."

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This reviewer believes that the author has also achieved at least a personal triumph by completing this new book. The volume is well-bound, and it contains high-quality black-and-white illustrations and many useful maps. Even a little serpent ornament from Conrad Gesner's *Fischbuch* (1670) tastefully adorns the text's acid-free paper.

Captain Kidd and the War against the Pirates is an excellent book for any scholar or general reader interested in the history of piracy, and in some of the pirates involved, particularly William Kidd. The author has conducted extensive research for his work at a number of prestigious institutions, especially in New York and Great Britain, and is now professor of history at the University of California at San Diego.

STUART MORGAN

Beverly Farms, Massachusetts

DUNCAN HAWS and ALEX A. HURST, *The Maritime History of the World,* 2 vols. (Sussex: Teredo Books Ltd., 1985). 12¼" x 9," cloth, vol. 1: xxv + 494 pages, vol. 2: vii + 419 pages; 203 illustrations, 31 maps, bibliography, index. £83.90.

Is it possible for any two individuals to possess enough knowledge to write an accurate, balanced, and comprehensive maritime history of the world? Can a single reviewer, subject to the same limitation but to an even greater extent, provide a competent commentary? The answer to both of these questions is, of course, the same.

The structure of this two-volume work is encyclopedic, with the first volume covering from 5000 B.C. to A.D. 1816 and the second from 1816 to 1984. Within these brackets, maritime history is divided into eight historical sections, with the longest period lasting from 5000 B.C. to A.D. 782 and the shortest covering 1945 to 1984. Each section is further subdivided into those individual years during which specific maritime historical events occurred throughout the world. Thus, for example, for the year 1799 (chosen more or less at random as the founding date of the Peabody Museum), there are no fewer than ten separate entries. They include listings for the French capture of Naples; the Quasi-War between the United States and France; the wrecking of an ex-French warship with an immense quantity of specie; the formation of the Russian-American Company in Alaska; Napoleon's landing at Fréjus and subsequent *coup d'état;* the British capture of the Spanish prize *Hermione*; the Russian blockade of the coast of Italy; and a reference to the Chinese opium trade. At the end of each of the eight historical sections is a commentary which provides a broad interpretive overview of the period just parsed. The whole work is bound together by an all-encompassing index, more than one hundred pages long and by far the most valuable asset of the entire enterprise.

While Mssrs. Haws and Hurst must be applauded for their herculean effort and willingness to undertake such a daunting project, there are some rather severe shortcomings in their historic outline. This is particularly true for the introduction and first section, covering from 5000 B.C. to A.D. 782. Venturing far beyond the bounds of responsible history, the authors present the legend of Atlantis as fact, link it to mythical Mu and finally to Cortez's conquests in Central America, asking their readers ". . . whence, if not from Atlantis, had the original Quetzlcoatl come?" They also advocate quite authoritatively the unlikely theory of detachable warship rams in 700 B.C. as well as four- through forty-banked war galleys, unaware perhaps that their compatriot John Morrison proved nearly fifty years ago that no ancient warship ever had more than three superimposed banks of rowers.

The choice of illustrations for this work also raises some questions. Rather than relying upon pictures contemporary with the respective historic periods under discussion, the authors for the most part selected or commissioned modern marine art to illuminate their text. Ship replicas, photographs of dioramas, and modern ship models of historic vessels (including one sailing model floating in an out-of-scale sea) add little to the overall effect. Finally, an extremely abbreviated bibliography at the start of the first volume lists only authors' names and book titles, and not a single source, publisher, or date.

Haws and Hurst are on much firmer ground in their discussions of medieval and later periods than in their earlier ones. Nevertheless, serious students are likely to use this work only as an encyclopedia; as a starting point or quick fix for names, dates, and events. In any case, many will find it difficult to add to their libraries because of the high price.

PAUL FORSYTHE JOHNSTON

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ROBERT C. POST, *The Tancook Whalers: Origins, Rediscovery, and Revival* (Bath, Maine: Maine Maritime Museum, 1985). 8½" x 11", paper, xi + 113 pages, 128 drawings, plans and photographs, note on sources, index. $15.00.

This small, attractively presented volume is a laudable first attempt to tell the story of one of North America's unique working small craft, the double-ended Tancook whaler of Nova Scotia's South Shore. It is really two books in one. In the first forty-six pages, author Robert C. Post narrates a brief history of the schooner-rigged whaler and the island fishing community on Mahone Bay responsible for its development. In the last sixty-one pages, he relates the process by which the Apprenticeship of the Maine Maritime Museum in Bath designed and built a thirty-four-foot replica, the *Vernon Langille*, and sailed it to Nova Scotian waters in 1979.

Part II, detailing the actual building of a Tancook whaler using traditional methods, is the book's strongest section. By means of descriptive text, technical drawings, and numerous photographs, the step-by-step construction of a late nineteenth-century sailing workboat is amply elucidated. Those who would like to understand in detail the procedures followed and the problems faced in resurrecting such a craft as the Tancook whaler will find this portion of the book rewarding, as will those interested in the philosophy and operation of the Bath museum's pioneering Apprenticeshop boatbuilding program.

Most readers of the *American Neptune*, however, will doubtless be more attracted to the lengthy historical prologue (Part I), and it is here that the work is unfortunately flawed. While containing an abundance of period photographs, innumerable line drawings, and extensive interviews with Tancook Islanders, this section is also replete with factual errors and dubious interpretations resulting from incomplete or superficial research.

A number of the errors are small ones of the careless variety, suggesting insufficient attention to editorial detail. A photograph showing whalers hauled at Tancook Island in 1905, for instance, is improperly described (p. 31) as picturing the island's southeast, rather than northwest, cove. Similarly, a trio of half-model draughts purported to depict Tancook schooners (p. 44) includes one that is obviously not of a counter-stern Tancook.

Such mistakes, which noticeably mar the book's picture captions, are annoying rather than critical, but others are more serious. For example, the assertion is made (pp. 28, 46) that all of Tancook's boatbuilders left the island after World War I, effectively ending the industry there. This is certainly not true, and ignores several well-known builders who remained active throughout the 1920s and 1930s. Additional errors of consequence include an incorrect account of Tancook's early settlement, inaccurate historical population figures for the island, an inexact listing of the original whaler-building families, and mistaken notions of when the local fisheries reached their peak and why they declined (pp. 15, 28, 43).

Most glaring, perhaps, is an attempt to date the initial appearance of the Tancook whaler by means of a wrong birthdate for Alfred Langille, patriarch of Tancook boatbuilding and presumed builder of the first double-ender on the island. This imprecise dating, which errs by nearly twenty years, becomes the basis for a claim that the first whaler may have been built as early as 1840 and was most probably built by 1860 (pp. 15, 17). In actuality, Howard I. Chapelle's earlier estimate (in *American Small Sailing Craft*) of 1860-1870 remains closer to the truth and may even be on the low side. The same dating error—and one easily avoided by reference to public vital records—leads the author to doubt (p. 43) that Langille could have operated a shop on Tancook in 1912, as stated by living descendants, despite the fact that he lived until 1926.

Beyond pure errors of fact, difficulties arise from the book's regrettable habit of confusing the pre- and post-1910 whaler and schooner eras in Tancook Island's maritime development. This is apparently a result of transposing the recollections of living islanders, whose active careers spanned the years between the world wars, to an earlier period. An unbroken historical continuum is assumed, which leads to the false impression, for example, that whalers were commonly built up to fifty feet in length (pp. 3, 17), that half-models were always used in their design and construction (pp. 54, 102), that they routinely fished thirty or more miles offshore (pp. 20, 33), and that they were regularly employed in coasting to and from Halifax (p. 37). These statements, while true if applied to the counter-stern Tancook schooners of the early twentieth century, are wrong or speculative when applied to the nineteenth-century whalers that preceded them.

The shortcomings evidenced throughout Part I of what would otherwise be an engrossing piece of work may likely be traced in large measure to its unusual authorship. Various members of the Maine Maritime Museum staff, past and present, provided the book's background research, while Robert C. Post, the author of record, interpreted that research and did the actual writing. In retrospect, this seems an undesirable procedure to have used and cannot be recommended.

In addition, the book reveals the pitfalls, as well as the advantages, of oral history. Interviews with participants in a historical process can provide color and useful—even indispensable—information, but good history results only if that highly subjective data is buttressed or qualified by in-depth research in the written record. In this case, the failure to consult a number of readily available sources, including Canadian federal and provincial government documents and contemporary newspapers, has produced a somewhat lopsided narrative—one based largely on oral remembrance. As such, it is inevitably suspect.

In summary, persons unfamiliar with the Tancook whaler, a marvelous vessel deserving recognition equal to that of more widely publicized craft like the Friendship sloop and the Cape Cod catboat, will find Mr. Post's book a useful and well-illustrated introduction to a little known subject. For connoisseurs of small boat development and for historians of Maritime Canada and the North Atlantic fisheries, however, it will necessarily be an inconclusive study—a thoughtfully conceived departure point, but by no means the final word.

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NORTH AMERICAN SOCIETY FOR OCEANIC HISTORY

Call for Papers

The next annual meeting of the North American Society for Oceanic History will be held at Woods Hole, Massachusetts from 28 to 30 April 1988. Panels on Oceanography and History, Oceanic Trade and Navigation, New England and the Sea, Underwater Archaeology, Life at Sea and Naval Affairs are planned. Proposals for papers and panels should be sent to Jim Millinger, Program Committee Chairman, Sea Education Association, Box 6, Woods Hole, Massachusetts 02543.

Index to Volume XLVII

Dates in parentheses after the names of vessels indicate either the years of building or the reference. Dates indicating the year of the reference are printed in italic type: vessels having compound names are indexed under the initial letter of the *first* word. A list of vessels having compound names, arranged alphabetically by their last names, follows the index. This index was prepared by Geraldine M. Ayers of the Peabody Museum Staff.

Adamant, ship *(1777)*, 8.
Adams, ship *(1842)*, 92.
Adams, John Quincy, 27.
Adams, Thomas, 90.
Alabama, warship *(1864)*, 118.
Albion, Robert G., mention of, 92.
Alert, ship *(1798)*, 165.
Alert, ship *(1864)*, 121.
Alexander Gordon & Company, 90.
Allen, Jr., Captain Charles H., 121.
Allen, George H., 119.
Allen Family Chart, 122.
Allen, William, 122.
Alva, yacht *(1892)*, 127.
America, twin-engine seaplane (1917), 249.
AMERICAN NEPTUNE, THE, editorial comment, 4, 76, 156, 228.
American Passenger Ships: The Ocean Lines and Liners, 1873-1983, by Frederick E. Emmons, reviewed, 55.
Amory Sibley, steamer *(1847)*, 34.
Amsterdam, Dutch East India ship, *(1748)*, 279.
Anatomy of the Ship: The Type VII U-Boat, by David Westwood, reviewed, 55.
Anglo-American Oil Company, Ltd., 47.
Angus, Master Commandant Samuel, 27.
An Annotated Bibliography of U.S. Marine Corps History, by Paolo E. Coletta, reviewed, 215.
Antioch, ship *(1835)*, 90 ff.
Appleby, John C., "The Charter Party of the *Triall:* An Unsuccessful Virginia Venture, 1606-1607," 77-82.
Arbuthnot, Admiral Marriot, 11.
Arctic Whalers, Icy Seas, by W. Gillies Ross, reviewed, 62.
Ardman, Harvey, Normandie: *Her Life and Times*, reviewed, 141.
Aroostook, tender *(1919)*, 253.
AR VAG, by Bernard Cadoret, reviewed, 142.
Astrea, ship *(1796)*, 124.
Atlas of Lake Champlain, 1779-1780, by Capt. William Chambers, R.N., reviewed, 211.
Avon, brig *(1848)*, 93.

Babbage, Charles, 177.
Bache, Alexander Dallas, 177.
Bache, Lt. Richard, 175.
Bainbridge, William, 20.
Baker, William A., *The Lore of Sail*, reviewed, 142.
Balestier, Joseph, U.S. consul, 172.
Baltimore, cruiser *(1919)*, 252.
Bancroft, George, Secretary of the Navy, 172.
Barron, Commodore James, 20.
Bass, George, mention, 281.
Baury, Midshipman Frederick, 16.
Beacon Oil Company, 47.
Beadle, Charles, 122.
Benjamin F. Packard, ship *(1883)*, 131.
Benson, Admiral William S., 255.
Biddle, James, 28.
Biles, Professor John H., 198.
Bingley, Sir Ralph, 77 ff.
Birdseye, Clarence, 268.
Blok, Dutch ship *(1783)*, 245.
Bomford, Colonel, 117.
Books Received, 138-40.
Book Reviews, 54-64, 141-46.
Book Reviews, 211-18, 282-85.
Boscawen, three-decker ship (1748), 243 ff.
Boston Tow-Boat Company, 126.
Boyd, Norman, *The Discovery of Ship Models*, reviewed, 59.
Brouwer, Norman J., *International Register of Historic Ships*, reviewed, 216.
Brown Hall, ship *(1775)*, 7.
Brownlee, Edward G., review by, 57.
Bruijn, Jaap R., "The Dutch East India Company as Shipowner, 1602-1796," 240-48.
Bryant & Lee, 100.
Bush, William S., Marine Lieutenant, 18.
Butterworth, William John, 172.
"Byzantine and Moslem Shipping in the Mediterranean, 500-1250," by Archibald R. Lewis, 157-60.

C. A. Thayer, ship, 131.
Cadoret, Bernard, *AR VAG*, reviewed, 142.
Campbell, Captain Hugh G., 27.
Canova, ship *(1823)*, 90.
Captain Kidd and the War against the Pirates, by Robert C. Ritchie, reviewed, 282.
Carroll, Richard, 52.
Cascade, brig *(1850)*, painting of, 94.
Centennial Exhibition, 1876, illustration of, 180.
Central Rail Road and Banking Company of Georgia, 34.
Central Rail Road and Canal Company, 34.
Chambers, Arthur and George, 77.
Chambers, Capt. William, *Atlas of Lake Champlain, 1779-1780*, reviewed, 211.
Champion of Sail: R. W. Leyland and his Shipping Line, by David Walker, reviewed, 213.
Change and Adaptation in Maritime History: The North Atlantic Fleets in the Nineteenth Century, by Lewis R. Fischer and Gerald E. Panting, reviewed, 64.
"Charter Party of the *Triall:* An Unsuccessful Virginia Venture, 1606-1607, The," by John C. Appleby, 77-82.
Chatham, steamer *(1847)*, 34.
Chauncey, Isaac, 27.
Cherokee, steamer *(1847)*, 34.
Cherokee, steamer (1848), painting of vessel, 36.
Chew, Purser Thomas, 15.
Chichester, Sir Arthur, 77 ff.
Christie, John, review by, 141.
Clay, Henry, 27.
Cole, Captain George A., 43.
Cole, Merle T., "Tankers in the Patuxent: The ESSO Fleet Lay-up Site in the 1930s," 45-53.
Coletta, Paolo E., "Pat Bellinger and the May 1919 Transatlantic Flight," 249-56.

Coletta, Paolo E., *An Annotated Bibliography of U.S. Marine Corps History*, reviewed, 214.
Collins, Edward Knight, 39.
Collins, Capt. John, 39.
Columbia, frigate *(1837)*, 29.
Columbia, ship (ex-*Great Northern*) *(1922)*, 203.
Connor, Master Commandant David, 29.
Conover, Commander Thomas A., 30.
Constitution, U.S. frigate *(1812)*, 14 ff, 169 ff.
Constitution and *Guerriere*, sketch of action, 15.
Constellation, frigate *(1819)*, 28.
Conte di Savoia, Italian lifeboat, *(1934)*, 51.
Cooney, Jerry W., "'Doing Business in the Smuggling Way' Yankee Contraband in the Rio de la Plata," 162-68.
Coquette, schooner *(1846)*, 121.
Cornè, Michel Felice, artist, 15.
Corwith Cramer, ship *(1971)*, 206.
Coxhoorn, Dutch ship *(1731)*, 245.
Cross, Capt. George, 24 ff.
Cyane, frigate *(1821)*, 28.

Dacres, Capt. James Richard, 16 ff.
Dahlgren, Commander John, 112
Dahlgren gun carriage, ordnance instructions, illustration, 118.
Daily United States Mail Steam Packet Line, 35.
Dakota, ship (1904), 199.
Dale, John B., 173.
Dana & Company, 106.
Daniels, Josephus, Secretary of the Navy, 255.
Davis, Capt. J. L., 181 ff.
Davis, Sen. John, 87.
Dean Brothers, 93.
Dean Emery, tanker *(1940)*, 52.
Decatur, Commodore Stephen, 20.
Delaware, Lackawanna & Western Railroad, 193 ff.
Delgado, James P., "Steamers to Savannah: The Origins and Establishment of the New-York and Savannah Steam Navigation Company," 33-44.
Deptford Dockyard, 8 ff.
Discovery of Ship Models, The, by Norman Boyd, reviewed, 59.
"'Doing Business in the Smuggling Way' Yankee Contraband in the Rio de la Plata," by Jerry W. Cooney, 162-68.
Dotson, John E., review by, 216.
Downes, Capt. John, 172.
Dragon, British ship *(1606)*, 77 ff.
Dudley, William S., *The Naval War of 1812: A Documentary History*, Vol. 1, reviewed, 214.
Dunne, W. M. P., "The South Carolina Frigate: A History of the U.S. Ship *John Adams*," 22-32.
"Dutch East India Company as Shipowner, 1602-1796, The," by Jaap R. Bruijn, 240-48.
Dutch East India Company, 240 ff.

Eastern Railway Company of Minnesota, 193 ff.
East India Company, 6 ff.
Eastport Salt Works, 87.
Eclipse, ship *(1838)*, 29.
Edward Johnston, British ship *(1853)*, 101.
Elisha Walker, tanker *(1940)*, 52.
Elliot, Maj. George, 178.
Elsie, tug *(1887)*, 116.
Emmons, Frederick E., *American Passenger Ships: The Ocean Lines and Liners, 1873-1983*, reviewed, 55.
Enterprize, schooner *(1803)*, 27.
ESSO, oil company, 45 ff., illustrations of, 50.
Ethyl, SS *(1938)*, 49.
Evans, Amos A., Surgeon, 16.
Evans, Samuel, 27.
Exchange, schooner *(1820)*, 28.

Faraday, Michael, 177.
Favorite, ship *(1860)*, 100.
Ferguson, E. James, *The Papers of Robert Morris, 1781-1784*, reviewed, 54.
Ferne, Sir John, 77.
Fischer, Lewis R. and Gerald E. Panting, *Change and Adaptation in Maritime History: The North Atlantic Fleets in the Nineteenth Century*, reviewed, 64.
Fishmonger's Company of London, 77.
Forest State, ship *(1855)*, 89.
Fort Mechanic, 23.
Fort Pinckney, 23.
Fowler, William, review by, 214.
Fox Josiah, Assistant Naval Constructor, 24.
Fresnel lens, illustration of, 185.
Fulton, Dr. George, 207.

Geldermalsen, Dutch East India Company ship, *(1752)*, 275-81.
General George S. Simonds, ship (ex-*Great Northern*, ex-*Columbia*, ex-*H. F. Alexander*) (1942), 203.
"Genoese Shipowners and Their Ships in the Twelfth Century," by Hilmar C. Krueger, 229-39.
George Laws, ship *(1864)*, 123.
George M. Stevens & Co., 184 ff.
George Washington, ship *(1917)*, 203.
Germain, Lord George, 6.
Gilbert, Martin, *Winston S. Churchill: Finest Hour, 1939-1941*, reviewed, 143.
Gilliam, Henry, 16.
Gipsey, British ship *(1853)*, 101.
Gray, Capt. Robert, 165.
Great Northern, ship *(1914)*, 202.
Great Northern Railway, 193 ff.
Great Northern Steamship Company, 193 ff., sailing poster, 204.
Green, Capt. J. F., 31.
Gregory, George F., artist, 130.
Greyhound, British ship (1606), 777.
Gridley, destroyer *(1919)*, 254.
Guerriere, frigate *(1812)*, 15 ff.

H. F. Alexander, ship (ex-*Great Northern*, ex-*Columbia*) *(1922)*, 203.
H. L. Cook, steamer *(1847)*, 34.
H. L. Hunley, Confederate submarine (1864), 31.
Hague, Robert L., 46.
Halsey, Thomas, 164.
Hamilton, Paul, Sec. of the Navy, 14.
Hartley, Condon & Company, 104.
Hatcher, Capt. Michael, 275.
Haviland, E. Kenneth, review by, 59-62.
Haws, Duncan and Alex A. Hurst, *The Maritime History of the World*, reviewed, 283.
Hawthorne, Nathaniel, 169.
Henley, Commodore John D., 27.
Henry, Joseph, 176 ff.
Heren Zeventien, or Gentlemen Seventeen, Dutch East India Company, 241 ff.
Hezekiah Williams, timber drogher *(1849)*, 100.
Hill, James Jerome, 193 ff.
Hofsommer, Don L., "The Maritime Enterprises of James J. Hill," 193-205.
Holcomb, Sherman, 128.
Hornet, frigate *(1821)*, 28.
Housatonic, steam-sloop *(1864)*, 31.

Howes, Capt. Frederic, 133.
Howes' Patent Topsail Rig, illus. of, 134.
Howland and Aspinwall, 43.
Huasteca Petroleum Company, 47.
Hull, Capt. Isaac, 14 ff.
Hurst, Alex A. and Duncan Haws, *The Maritime History of the World,* reviewed, 283.
Hutchinson, Capt. Daniel H., 121.
Hyde Windlass Company of Bath, 132.

Illustration of steam engines of *Tennessee* and *Cherokee*, 38.
International lifeboat racing team illustration of, 51.
International Register of Historic Ships, by Norman J. Brouwer, reviewed, 216.
Iron Steamboat Company, 34.
"Isaac Hull's Victory Revisited," by Tyrone G. Martin, 14-21.
Ivanhoe, steamer *(1847)*, 34.

J. L. Dimmock, ship *(1854)*, 104.
Jackman, S. W., review by, 55.
Java, HMS frigate *(1812)*, 16.
Jeffreys & Darcy, 93.
Jenkins, Lt. Thornton A., 175.
Jersey Standard, 45.
John Adams, frigate (1799), 22 ff., painting of vessel, 23.
John D. Archbold, ship *(1913)*, 45.
John Randolph, steamer *(1847)*, 34.
Johnston, Paul Forsythe, review by, 283, mention, 281.
Jones, William, Sec. of the Navy, 20.
Jörg, Christiaan J. A., 275.
Joseph Howe, ship *(1860)*, 104.

Keasarge, warship *(1864)*, 118.
Kemble, John Haskell, review by, 217.
Kennithorpe, George, 77.
Kent, 1st Lt. Bartholomew, 16.
Knappenhof, Dutch ship *(1731)*, 245.
Krueger, Hilmar C., *Navi e proprietà navale a Genove, seconda metà del sec. XII,* reviewed, 216.
Krueger, Hilmar C., "Genoese Shipowners and Their Ships in the Twelfth Century," 229-39.

Laconic, bark *(1851)*, 99.
Lago Shipping Company, Ltd., 47.
Lai Sung, Chinese artist, 130.
Lamar, steamer *(1847)*, 34.
Lamb, Ursula, review by, 64.
Larson, Capt. Adolv, 51.
Le Decade, French privateer *(1800)*, 26.
Le Jason, French privateer *(1800)*, 26.
Lewis, Archibald R., editorial comment, 4, 76, 156, 228.
Lewis, Archibald R., "Byzantine and Moslem Shipping in the Mediterranean, 500-1250," 157-60, review by, 216.
Lochinvar, ship *(1835)*, 90 ff.
Long, David F., "'Mad Jack' Percival in Vietnam: First American Hostilities, May 1845," 169-73.
Lord Elgin, bark *(1840)*, 93.
Ludlow, Charles, 27.
Lundeberg, Philip K., review by, 211.
Lyford, Col. Stephen C., 180 ff.
Lynch, William F., explorer, 29.
Lyon, Capt. Thomas, 37.

Macedonian, HMS *(1812)*, 12.
Macedonian, sloop-of-war *(1862)*, 31.
Madison, Pres. James, 27.
Maine, ship *(1853)*, 101.
"Maine Transatlantic Salt Trade in the Nineteenth Century, The," by Wayne M. O'Leary, 83-107.
Marcus, Capt. Fred, 49.
Margery, transport *(1781)*, 11.
Mariana, ship *(1799)*, 164 ff.
Marion, sloop-of-war *(1862)*, 31.
"Maritime Enterprises of James J. Hill, The," by Don L. Hofsommer, 193-205.
Maritime History of the World, The, by Duncan Haws and Alex A. Hurst, reviewed, 283.
"Maritime Studies at Sea Semester," by James Millinger, 206-10.
Marsilly Carriage, illustration, 115.
Martin, Tyrone G., "Isaac Hull's Victory Revisited," 14-21, mention of, 173.
Martin, Wallace E., *Sail & Steam on the Northern California Coast, 1850-1900*, reviewed, 217.
Meijenburg, Dutch ship (1713), 248.
Mentor, ship *(1800)*, 165.
Meshouda, Tripolitan cruiser, former American ship *Betsey* of Boston, (1802), 26.
Messenger, ship *(1894)*, 127.
Metamora, steamer *(1849)*, 42.
Miller, George L., "The Second Destruction of the *Geldermalsen*," 275-81.
Milliken, Capt. John F., 51.
Millinger, James, 'Maritime Studies at Sea Semester,' 206-10.
Mindoro, ship *(1864)*, 120.
Minnesota, ship (1903), 199.
Minto, Capt. Thomas and Eric Stevens, *The Search for the Kobenhaven,* reviewed, 143.
Mitchell, Samuel L., 36.
Model of lighthouse tower, illustration of, 188.
Morehead City Shipbuilding Corporation, 273.
Morgan, Charles S., review by, 143, 146.
Morgan, Stuart, review by, 282.
Morris, Lt. Charles, 16, 30.
Morris, Paul C., *Schooners and Schooner Barges*, reviewed, 146.
Muller, John, 108.
Muscogee, steamer (1848), 36.

NC aircraft personnel for May 1919 flight, photo of, 249.
NC-1 on Rockaway Beach, November 1919, photo of, 250.
NC-1 crew with plane at Rockaway Beach, photo of, 251.
NC flight track chart, May 1919, 252.
NC-1 towed by destroyer *Gridley*, photo of, 254.
NC-1 in water before rescue, photo of, 254.
Napier, Rob, "The Ship *Sooloo*(II) of Salem 1861-1887: History and Research for Building a Model," 119-37.
Nath'l Winsor and Company, 121.
Naval Ordnance Instructions, 1852, illustration, 113.
Naval War of 1812: A Documentary History, The, Vol. I, by William S. Dudley, ed., reviewed, 214.
Navi e proprietà navale a Genova, seconda metà del sec. XII, by Hilmar C. Krueger, reviewed, 216.
"Navy Board and Merchant Shipowners During the American War, 1776-1783, The" by David Syrett, 5-13.
New Ironsides, ironclad *(1863)*, 31.
New York, frigate *(1803)*, 26.
New-York and Savannah Steam Navigation Company, 33 ff.
"Nickel a Bucket: A History of the North Carolina Shrimping Industry, A," by William N. Still, Jr., 257-74.
Nonsuch, schooner *(1819)*, 28.
Normandie: *Her Life and Times*, by Harvey Ardman, reviewed, 141.
North Carolina, ship-of-the-line *(1821)*, 28.
North Carolina, receiving ship *(1862)*, 114.
North Land, ship (1894), 195 ff.
North West, ship (1894), 195 ff.

North Wind, ship *(1890)*, 194.
Northern King, ship *(1890)*, 194.
Northern Light, ship *(1888)*, 193.
Northern Pacific, ship (1914), 202.
Northern Queen, ship *(1890)*, 194.
Northern Star, ship *(1890)*, 194.
Northern Steamship Company, 193 ff.
Northern Wave, ship *(1890)*, 194.
Northerner, steamer *(1847)*, 35.
Novelty Iron Works of Stillman, Allen & Company, 40.

Ocean Bride, ship *(1860)*, 104.
O'Leary, Wayne M., review by, 284.
O'Leary, Wayne M., "The Maine Transatlantic Salt Trade in the Nineteenth Century," 83-107.
Oriental Limited, passenger train, illustration of, 200.

Pacific Mail Steamship Company, 43.
Padelford, Edward, 34.
Padelford, Fay & Company, Shippers and Merchants, 35.
Panay, ship *(1864)*, 120.
Panting, Gerald E. and Lewis R. Fischer, *Change and Adaptation in Maritime History: The North Atlantic Fleets in the Nineteenth Century*, reviewed, 64.
Papers of Robert Morris, 1781-1784, The, by E. James Ferguson, et al, reviewed, 54.
"Pat Bellinger and the May 1919 Transatlantic Flight," by Paolo E. Coletta, 249-56.
Paul H. Harwood, tanker *(1940)*, 52.
Pelican State, ship *(1852)*, 86.
Percival, Capt. John, 169 ff.
Perry, Commodore Matthew Calibraith, 30, 174 ff.
Perry, Commodore Oliver H., 27.
Philadelphia, Continental Navy gondola *(1776)*, 109.
Philadelphia, frigate *(1803)*, 14 ff.
Pickman, Dudley Leavitt, 119 ff.
Pickman, William D., 120.
Pilgrim, ship *(1864)*, 121.
Pinckney, Maj. Gen. Charles Cotesworth, 22.
Pleasonton, Stephen, 174 ff.
Pocahontas, blockade runner *(1864)*, 31.
Polly, transport *(1782)*, 12.
Porter, Commodore David, 28, 112.
Post, Robert C., *The Tancook Whalers: Origins, Rediscovery, and Revival*, reviewed, 284.
Powars, Capt. W. Frank, 125.
President, frigate *(1815)*, 14.
Pritchard, Paul, master builder, 24.

Queen, ship *(1860)*, 104.
Queen of the Lakes, British ship *(1858)*, 102.

R. L. Hague International Lifeboat Racing Trophy, 51.
Read, Commodore George C., 29, 172.
Reilly, Jr., John C., *United States Navy Destroyers of World War II*, reviewed, 144.
Ridderkerk, Dutch ship *(1783)*, 245.
Riggers's Apprentice, by Brian Toss, reviewed, 56.
Ringgold, Cadwalader, explorer, 29.
Ritchie, Robert C., *Captain Kidd and the War against the Pirates*, reviewed, 282.
Robertson, John, 109.
Rodgers, Commodore John, 14.
Romania, ship *(1864)*, 123.
Rosier, James, 77.
Ross, W. Gillies, *Arctic Whalers, Icy Seas*, reviewed, 62.
Rowan, Commodore, S. C., 31.
Royal Britain, transport *(1781)*, 11.
Russell, Jonathan, 27.
Rutledge, Gov. Edward, 22.

St. Leon, ship *(1835)*, 90, painting of, 91.
St. Paul, Minneapolis & Manitoba Railway, 193 ff.
Sail & Steam on the Northern California Coast, 1850-1900, by Wallace E. Martin, reviewed, 217.
Sands, John O., "The U.S. Light-House Board: Progress through Process," 174-92.
Saturn, tug *(1892)*, 127.
Savannah, steamship *(1819)*, 33 ff.
Savannah Steam Ship Company, 33.
Schooners and Schooner Barges, by Paul C. Morris, reviewed, 146.
Schooner from Windward, by Mifflin Thomas, reviewed, 59.
Scott, Robert, Sailing Master, 16.
Sea Education Association (S.E.A.), The, 206 ff.
Search for the Kobenhaven, The, by Capt. Thomas Minto and Eric Stevens, reviewed, 143.
"Second Destruction of the *Geldermalsen*, The," by George L. Miller, 275-81.
Shatswell, John H., 124.
Shaw, John, 27.
Shawmut, ship *(1902)*, 200.
"Ship *Sooloo*(II) of Salem 1861-1887: History and Research for Building a Model, The," by Rob Napier, 119-37.
Silsbee, Benjamin H., 120.
Silsbee, John H., 120.
Silsbee, Nathaniel, 119 ff.
Smith, Capt. Moses, 16.
Snapper, H.B.M. brig *(1820)*, 28.
Song of the Clyde, by Fred M. Walker, reviewed, 57.
Sonoma, U.S. frigate *(1864)*, 31.
Sooloo(II), ship (1861), 119 ff.; line drawings of, 120, 126, 132, 134; at Union Wharf, Boston, 129; color scheme chart, 135; author's model, 136.
South Carolina, battleship *(1910)*, 249.
South Carolina, merchant ship *(1798)*, 25.
South-Carolina, revenue cutter (1798), 24.
"South Carolina Frigate: A History of the Ship *John Adams*, The," by W. M. P. Dunne, 22-32.
Southerner, steamer *(1846)*, 35.
Spofford, Tileston and Company, 35.
Standard Oil Company, 45 ff.
Steam Boat Company of Georgia, 34.
"Steamers to Savannah: The Origins and Establishment of the New-York and Savannah Steam Navigation Company," by James P. Delgado, 33-44.
Steinmuller, Capt. A. C., 49.
Stevens, Eric and Capt. Thomas Minto, *The Search for the Kobenhaven*, reviewed, 143.
Stevens, Hawley, review by, 143.
Stewart, Capt. Charles, 20.
Still, Jr., William N., "A Nickel a Bucket: A History of the North Carolina Shrimping Industry," 257-74.
Stoddard, Daniel, 128.
Stoddert, Benjamin, Secretary of the Navy, 23.
Stone, Robert, 119 ff.
Stone, Silsbee and Pickman, 119 ff.
Storm King, schooner barge *(1892)*, 127.
Stringham, Commander Silas K., 29.
Sweet, Dick, mention of, 281.
Syrett, David, "The Navy Board and Merchant Shipowners During the American War, 1776-1783," 5-13.

Table I—Salt Ships Arriving at Maine Ports, 93.
Table II—Departures of Liverpool Salt Ships for Main Ports, 95.

Table III—Subsequent Destinations of Vessels in Salt Trade, 96.
Table IV—Comparative Triangular Routes for Vessels in Salt Trade, 97.
Table V—Home Ports of Salt Trade Vessels, 98.
Table VI—Characteristics of Vessels in Salt Trade, 99.
Tancook Whalers: Prigins, Rediscovery, and Revival, The, by Robert C. Post, reviewed, 284.
"Tankers in the Patuxent: The ESSO Fleet Lay-Up Site in the 1930s," by Merle T. Cole, 45-53.
Tarbell, Joseph, 27.
Tayler, R. W., 184.
Taylor, John, 119 ff.
Taylor, Justin, 119.
Teagle, C. W., lifeboat *(1935)*, 51.
Tennessee, steamer (ex-*Muscogee*) (1848), 38 ff., lithograph of vessel, 39; line drawings of vessel, 40, 41.
Thos. A. Metcalf, steamer *(1847)*, 34.
Thomas, Mifflin, *Schooner from Windward*, reviewed, 59.
Thynne, Sir Henry, 77.
Tilley, John A., review by, 55, 59.
Tod, Giles M. S., review by, 142.
Toss, Brian, *The Rigger's Apprentice*, reviewed, 56.
Tremont, ship *(1902)*, 200.
Triall, freighter *(1606)*, 77 ff.
Truxton, Commodore Thomas, 25.
Tucker, Spencer C., "U.S. Navy Gun Carriages from the Revolution through the Civil War," 108-18.
Tybee, brig *(1849)*, 42.
Tyler, John, 172 ff.
Tyndall, Prof. John, 178.

Underwriter, tug *(1892)*, 127.
"U.S. Light-House Board: Progress through Process, The," by John O. Sands, 174-92.
U.S. Light-House Board display, illustration of, 186.
"U.S. Navy Gun Carriages from the Revolution through the Civil War," by Spencer C. Tucker, 108-18.
United States Navy Destroyers of World War II, by John C. Reilly, Jr., reviewed, 144.

Valle, James E., review by, 142, 145, 213.
Van Brunt, Captain, 115.
Van Imhoff, Governor-General, 243 ff.
Vermont, battleship *(1907)*, 249.
Village of Woods Hole, photograph of, 208.

Walker, David, *Champion of Sail: R. W. Leyland and his Shipping Line*, reviewed, 213.
Walker, Fred M., *Song of the Clyde*, reviewed, 57.
Ward, Commander J. H., 112.
Warner, David T., 46.
Warrington, Lewis, 28.
Washington, Brig. Gen. William, 22.
Waymouth, George, 77.
Webb Institute of Naval Architecture, 37.
Webb, Robert Lloyd, review by, 64.
Webb, William H., shipbuilder, 36.
Welles, Gideon, Secretary of the Navy, 31.
West India Company, 6 ff.
Westward, ship *(1971)*, 206 ff., illustration of, 209.
Westwood, David, *Anatomy of the Ship: The Type VII U-Boat*, reviewed, 55.
Wickwire, Franklin, review by, 54.
Wilkes, Lt. Charles, 172.
Wilkins, Captain, 20.
Wilkinson, John, 5.
Willard, Enoch G., 106.
William Jarvis, ship *(1848)*, 92.
William Seabrook, steamer *(1848)*, 37.
Wm. Sprague, tow boat *(1887)*, 130.
William Rockefeller, ship *(1913)*, 45.
William Witherle, ship *(1850)*, 98.
William Witherle & Company, 93.
Willis & Company, 93.
Willock, USMC (Ret), Col. Roger, review by, 214.
Windrim, James H., 181.
Winston S. Churchill: Finest Hour, 1939-1941, by Martin Gilbert, 143.
Wisconsin, battleship *(1907)*, 249.
Wise, Henry A., 169.
Wyman, Commander Thomas W., 29.

Yanch, ship *(1801)*, 166.
Yankee, brigantine *(1971)*, 206.
Yorktown, frigate *(1855)*, 30.

Zouche, Sir John, 77.

List of vessels having compound names arranged alphabetically by their last names.

Adams, John
Alexander, H. F.
Archbold, John D.
Bride, Ocean
Britain, Royal
Carolina, North
Carolina, South
Cook, H. L.
Cramer, Corwith
Dimmock, J. L.
Elgin, Lord
Emery, Dean
Hall, Brown
Harwood, Paul H.
Howe, Joseph
Hunley, H. L.
Jarvis, William
King, Northern
King, Storm
Lakes, Queen of the
Land, North
Laws, George
Leon, St.
Light, Northern
Metcalf, Thos. A.
Northern, Great
Pacific, Northern
Packard, Benjamin F.
Queen, Northern
Randolph, John
Rockefeller, William
Star, Northern
State, Forest
State, Pelican
Seabrook, William
Sibley, Amory
Simonda, General George S.
Sprague, Wm.
Teagle, C. W.
Thayer, C. A.
Walker, Elisha
Washington, George
Wave, Northern
West, Northern
Williams, Hezekiah
Wind, Northern
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York, New

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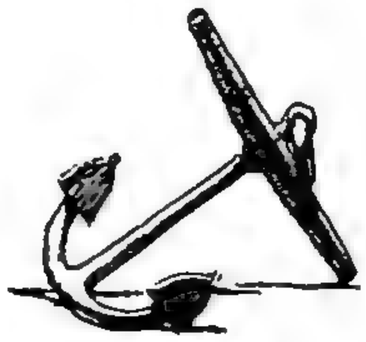

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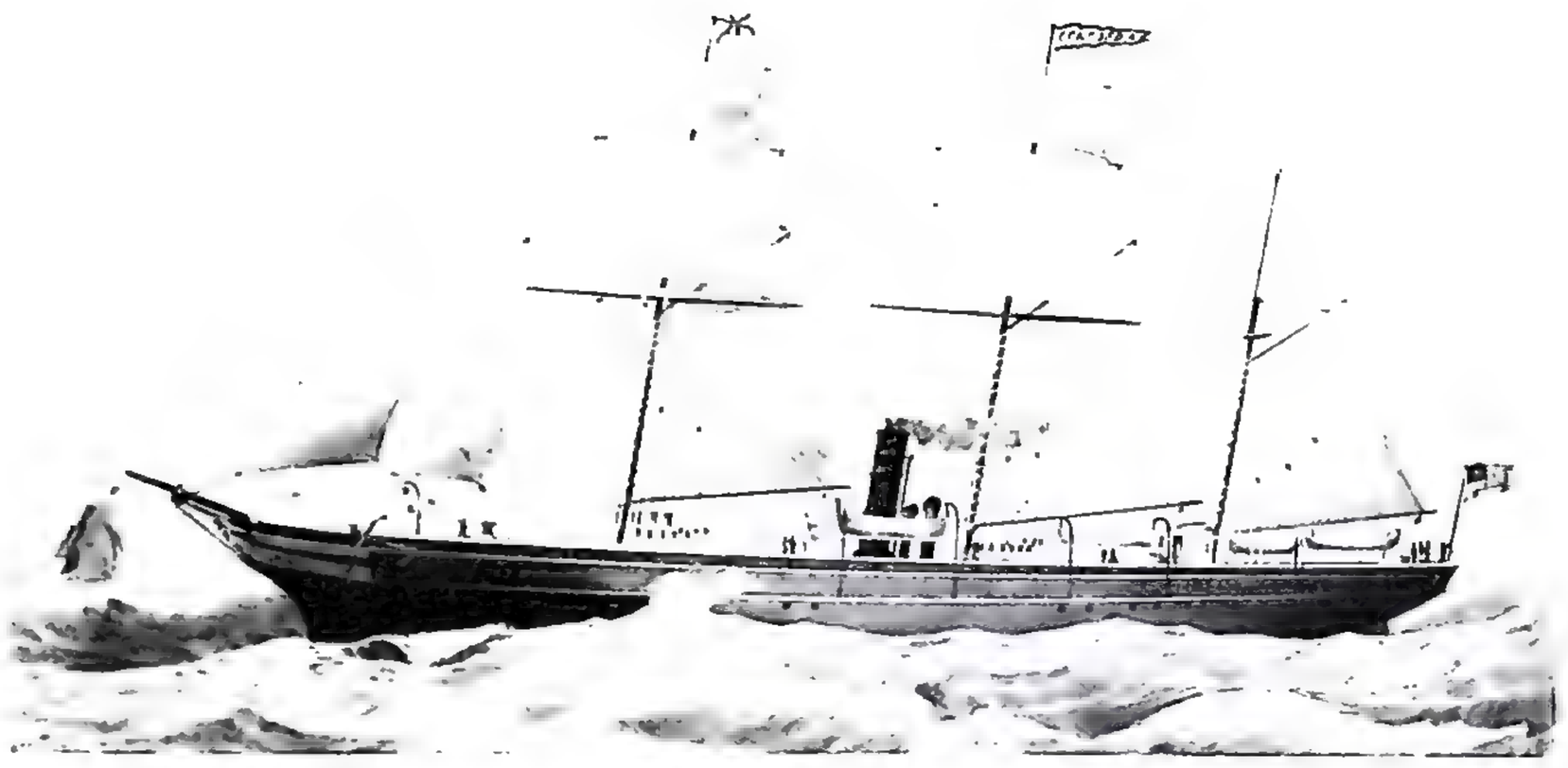

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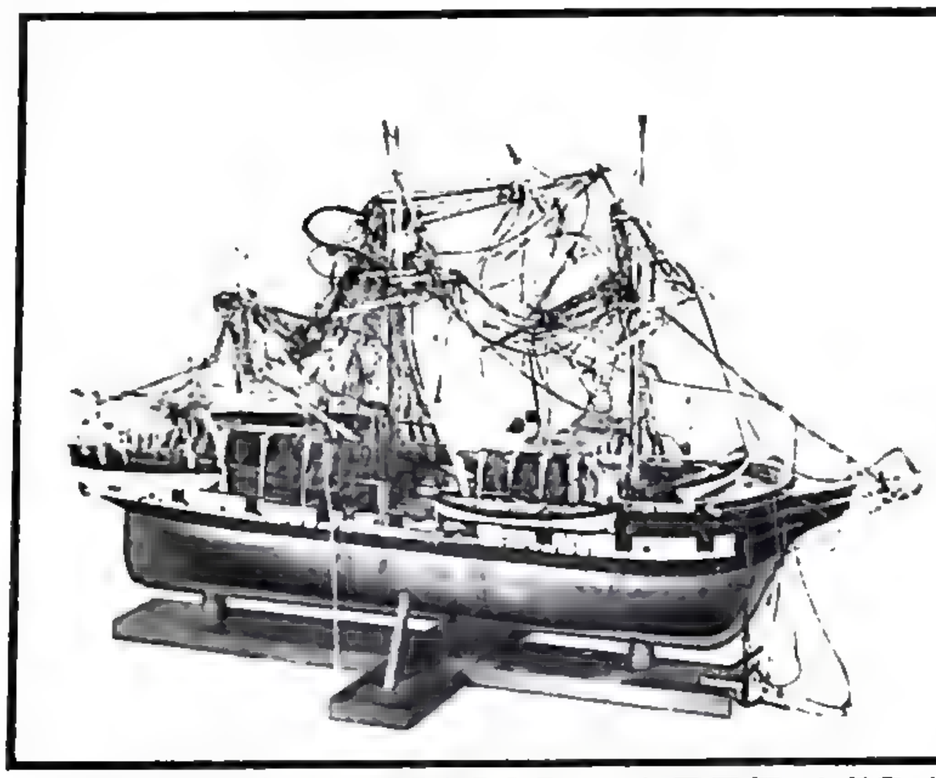

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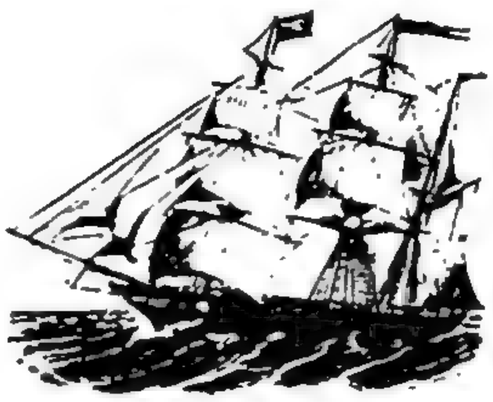

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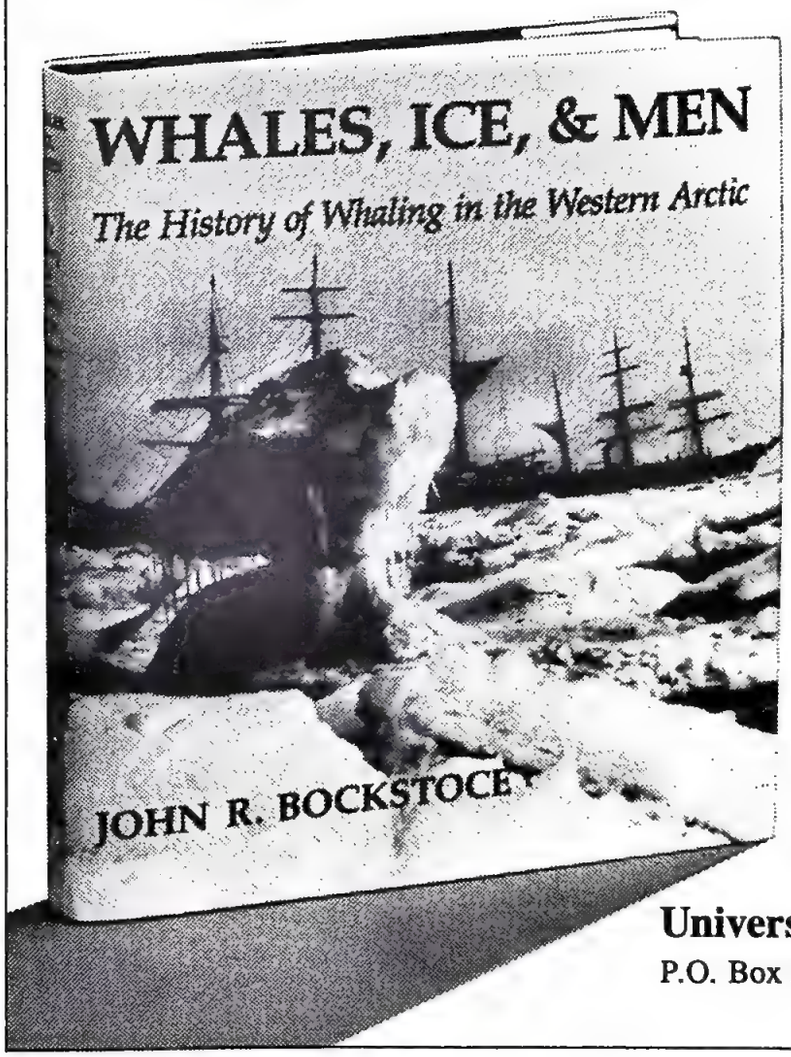

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Contents

Winter 1987

Editor's Comments 4

The Navy Board and Merchant Shipowners During the American War, 1766-1783, by DAVID SYRETT 5

Isaac Hull's Victory Revisited, by TYRONE G. MARTIN, CDR USN (RET.) 14

The South Carolina Frigate: A History of the U.S. Ship *John Adams*, by W. M. P. DUNNE 22

Steamers to Savannah: The Origins and Establishment of the New-York and Savannah Steam Navigation Company, by JAMES P. DELGADO 33

Tankers in the Patuxent: The ESSO Fleet Lay-Up Site in the 1930s, by MERLE T. COLE 45

Book Reviews 54

Contents

Spring 1987

Editor's Comments 76

The Charter Party of the *Triall:* An Unsuccessful Virginia Venture, 1606-1607, by JOHN C. APPLEBY 77

The Maine Transatlantic Salt Trade in the Nineteenth Century, by WAYNE M. O'LEARY 83

U.S. Navy Gun Carriages from the Revolution through the Civil War, by SPENCER C. TUCKER 108

The Ship *Sooloo*(II) of Salem 1861-1887: History and Research for Building a Model, by ROB NAPIER 119

Books Received 138

Book Reviews 141

Contents

Summer 1987

Editor's Comments 156

Byzantine and Moslem Shipping in the Mediterranean, 500-1250, by ARCHIBALD R. LEWIS 157

"Doing Business in the Smuggling Way," Yankee Contraband in the Río de la Plata, by JERRY W. COONEY 162

"Mad Jack" Percival in Vietnam: First American Hostilities, May 1845, by DAVID F. LONG 169

The U.S. Light-House Board: Progress through Process, by JOHN O. SANDS 174

The Maritime Enterprises of James J. Hill, by DON L. HOFSOMMER 193

Maritime Studies at Sea Semester, by JAMES MILLINGER 206

Book Reviews 211

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